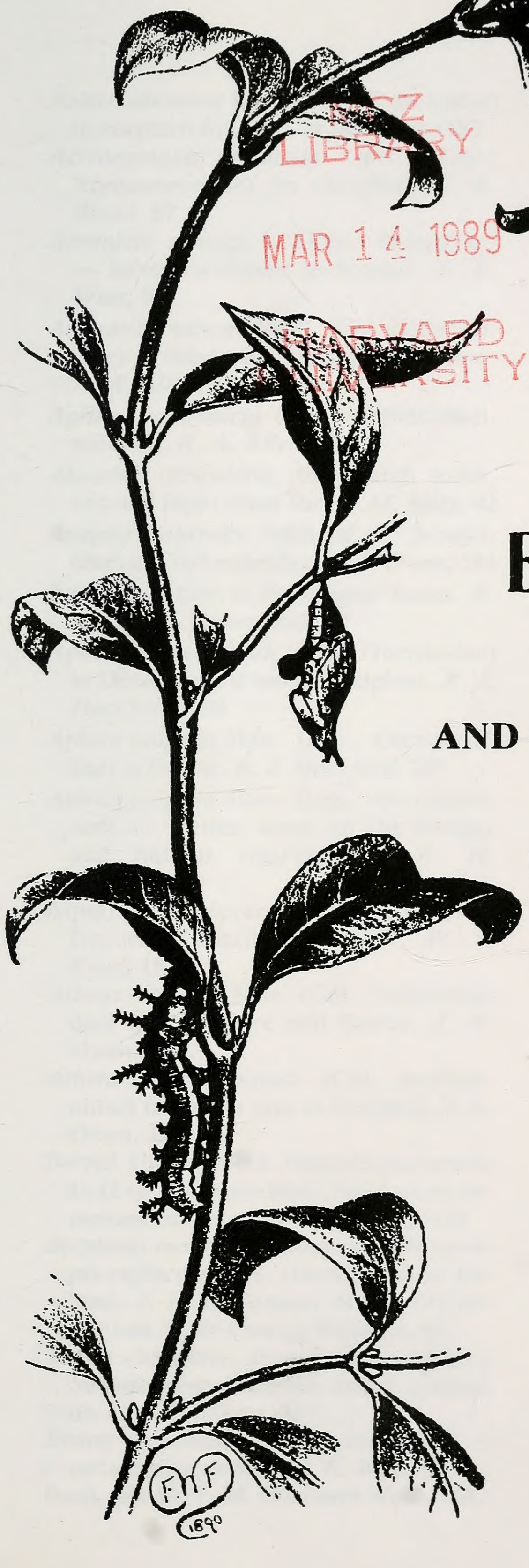

The Entomologist's Record

AND JOURNAL OF VARIATION

EDITED BY

P. A. SOKOLOFF, F.R.E.S.

Vol. 100

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CONTENTS

CONTRIBUTORS

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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WANTED – for research collection: reared parasitic Hymenoptera. Dr. Mark R. Shaw, Royal Museum of Scotland, Chambers Street, Edinburgh, EH1 1JF.

THE CHANGING GEOGRAPHY OF THE COMMON BLUE BUTTERFLY *(POLYOMMATUS ICARUS)* IN NORTHUMBERLAND

By R. J. ASPINALL*

Introduction

Heath, Pollard and Thomas (1984) have described patterns of change in abundance and distribution for butterflies in Britain and Ireland. Many species show a decline in abundance or contraction of range, although a few species have recently increased in number and distribution. In Scotland the speckled wood (*Pararge aegeria*) has colonised the north-east since 1960 (Thompson, 1980; Barbour, 1986), and in northern England the orange tip (*Anthocharis cardamines*) has recolonised since the 1950's (Harper, 1968; Long, 1979). In Northumberland, the common blue (*Polyommatus icarus*) has had a highly variable distribution during the last 150 years, the most notable and encouraging feature of which is the extent to which the species has recolonised the county over the last twenty years. This paper describes the changing distribution of the common blue in Northumberland and attempts to account for the changes observed.

The Pattern of Distribution

1. *Distribution before 1950* (Figure 1). Records of the common blue are widespread from Northumberland for the period up to 1950. The earliest record dates from 1769, and in 1857 the species was described as:

> "The most abundant of our small butterflies, appearing in every grassy lane and field at the end of May and continuing until early in July. A second brood in August and flies till late in September." (Wailes, 1858).

This situation seems to have been maintained during the second half of the nineteenth century, the species occurring.

> "Everywhere throughout the district except on higher moorlands". (Robson, 1902).

Records from early this century come from throughout the county, but in about 1950 the species suddenly became restricted in distribution.

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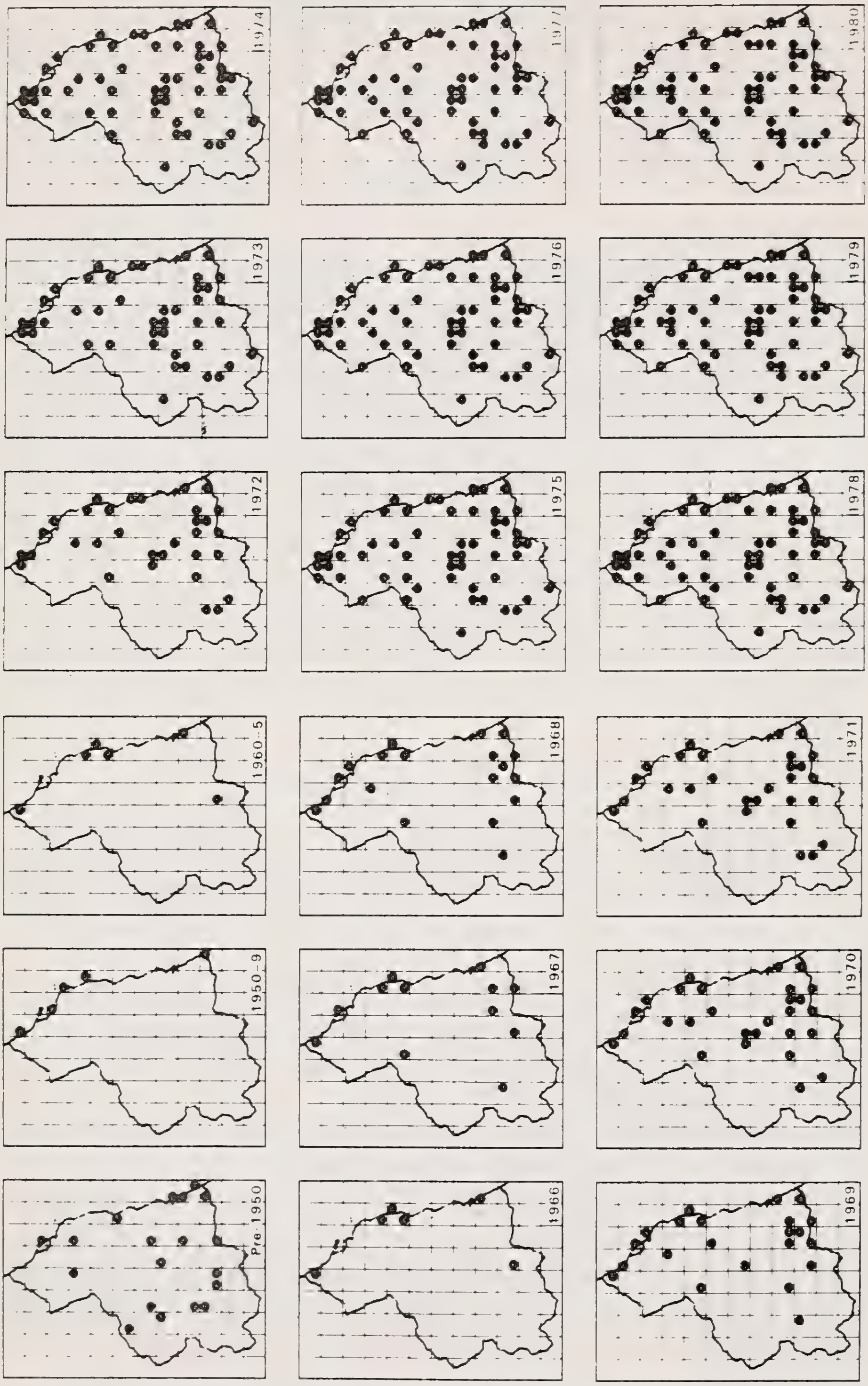

Figure 1. Distribution of records of the common blue in Northumberland from pre-1950 to 1980. Records are plotted on 5 x 5 km squares.

2. *Decline : 1950 - 1966* (Figure 1). Between 1950 and 1959 the species was recorded only along the coast, principally in sand dune systems and particularly in the north between Berwick and Dunstanburgh, but with a single record from Tynemouth Priory in 1956. Between 1960 and 1966 records were still largely confined to the coast, a 1962 record from Riding Mill in the lower Tyne valley being the only exception.

3. *Increase : 1967 - 1971* (Figure 1). During 1967 and 1968 the species began to recolonise inland areas of the county, recolonisation being centred on Tyneside and in the north of the county. In Tyneside, records came from Gosforth Park, Woolsington and Wallsend, and there were also observations from Throckley, Newburn, Crag Lough and Barrasford in the Tyne valley. In the north there were fewer records, the species being found at Chillingham and in the Breamish valley. The species also increased along the coast, new records coming from Holy Island, Embleton, Seahouses and Budle Bay.

Between 1969 and 1971 the species built on, and extended, the areas colonised during 1967 and 1968. Records were more widespread, both along the coast and in Tyneside, and the distribution extended along the Tyne valley into both the South Tyne and Tyne valleys. The species was also recorded from the valley of the River Wansbeck, and, further north, in the valley of the River Aln. By 1971 the species had been recorded from Allendale, one of the main tributary valleys of the South Tyne system.

4. *Consolidation : 1972 - 1980* (Figure 1). The pattern of recolonisation between 1972 and 1980 followed that established during the initial period of recolonisation between 1967 and 1971. The main routes for expansion continued to be the river valleys; by 1973 the species was recorded in Coquetdale and Redesdale, the latter being a tributary of the North Tyne. In the South Tyne system there was a record of from Allenheads in Allendale, this being at an altitude of 400m. By the mid-1970's therefore, all the main river valleys of the county had been colonised, together with much of the coastline, records from 1975 to 1980 confirming this pattern of distribution and showing the species to have consolidated its expansion.

Discussion

This sequence of change in distribution of the common blue raises several questions about factors influencing numbers and distribution of the species :

1. What was the cause of decline in the 1950's?
2. What initiated the sudden and extensive recolonisation in 1967/1968?
3. For what reasons are the river valleys the favoured route for dispersal?

1. *Decline.* Nationally, the common blue has decreased in abundance this century; this is largely the result of modern agricultural practices, particularly use of herbicides, which reduce populations of the larval food plant *Lotus corniculatus* in improved pasture and other grassland, and thereby reduce populations of the butterfly (Heath, *et al.,* 1984). Support for this being the possible cause of the post-1950 decline in Northumberland comes from the timing of the decline and the pattern of distribution in the county during 1950-1966.

The start of the decline coincides with the widespread introduction of synthetic herbicides and insecticides for agricultural use (Fryer and Chancellor, 1974; Sly, 1977). Mixtures of herbicides and insecticides have recently been shown to reduce common blue populations (Rands and Sotherton, 1986) through reducing populations of larval food plants (Southerton, Rands and Moreby, 1985). Reductions in size of populations may be expected to be resolved locally into reductions in distribution.

Secondly, the pattern of distribution between 1950 and 1966 shows the species to have been restricted to coastal sand-dune sites which are free from agricultural activity and where *Lotus corniculatus* can grow without interference and support viable populations of adult butterflies.

2. *Increase.* Possible reasons for the initiation of the spread of the common blue are less obvious. Use of herbicides in management of roadside verges had begun to decrease by the late 1960's (Sheail, 1985) and it is possible that the spread of the common blue was the result of an increase in *Lotus corniculatus* as a smaller area of roadside was treated. Rabbit populations were also beginning to recover from myxomatosis by the late 1960's and their grazing may have reduced the competitive advantage of taller plants over *Lotus corniculatus* in rough pasture. Further, common blue records for Tyneside are principally associated with gardens, these being expected to contain fewer herbicides than either agricultural land or managed roadsides, and records from rural areas are confined to the main river valleys where the riparian environment may have provided sufficient habitat for the butterfly to have established populations and spread.

3. *Route of Dispersal.* The main route for recolonisation used by the common blue has been the river valleys, there being three reasons for this. First, *Lotus corniculatus* is confined to areas below 500m in Northumberland (Baker and Tate, 1868), and the river valleys fulfull this condition for much of their length. Second, the river valleys connect with the coastal areas, the main reservoir of the common blue between 1950 and 1966, and provide a continuous belt along which the common blue could spread, containing no barriers such as areas of high ground or abrupt changes in environmental conditions. Third, within the rivers there are many vegetated bars and floodplain sections which may recover quickly from agricultural pollution and provide areas of habitat suitable for the common blue within and through the improved agricultural areas of lowland Northumberland. This combination of a continuous lowland habitat offering little resistance to dispersal and connecting with the coastal reservoir of common blue populations is seen as the main reason for the river valleys being the routes of spread.

Summary

The common blue shows a clear pattern of changing distribution in Northumberland. Prior to 1950 the species was widely distributed in lowland parts of the county but suffered a major reduction in distribution between 1950 and 1966. This was possibly due to increasing use of agricultural chemicals which reduced populations of the larval food plant *Lotus corniculatus*. During this period the species was restricted to coastal sand dune sites. Starting in 1967 and continuing into the 1970's, the species began to recolonise the county using the river valleys as routes for expansion into, and through, the agricultural lowland; the river valleys offer little resistence to spread, and provide a continuous path containing sufficient suitable habitat for the butterfly to establish viable populations. It is suggested that initiation of the spread was due to an increase in the larval food plant *Lotus corniculatus* as a result of decreased use of herbicides and an increase in rabbit populations.

Acknowledgements

A. N. Tynan, P. S. Davis and C. Brewer kindly allowed me access to the Lepidoptera records for Northumberland held in the Hancock Museum, Newcastle-upon-Tyne. Mrs. D. Morrison and Mr. E. Quenet provided cartographic assistance.

References

Baker, J. G. and G. R. Tate (1868) A New Flora of Northumberland

and Durham. *Natural History Trans. of Northumberland and Durham* **2**, 1-316pp.

Barbour, D. (1986) Expansion of range of the Speckled Wood *Pararge aegeria* L., in north-east Scotland. *Entomologist's Rec. J. Var.* **98**, 98-105.

Fryer, J. D. and R. J. Chancellor (1974) Herbicides and our changing weeds.
In : Perring, F. H. (ed.) *The Flora of a Changing Britain.* BSBI. pp 105-18.

Harper, G. W. (1968) The Macrolepidoptera of Inverness-shire – Newtonmore District. *Entomologist's Rec. J. Var.* **80**, 36-40.

Heath, J. Pollard, E. and Thomas, J. A. (1984) *Atlas of Butterflies in Britain and Ireland.* Harmondsworth : Viking.

Long, A. G. (1979) The return of the Orange-Tip. *Entomologist's Rec. J. Var.* **91**, 16-7, 42-4, 158-61.

Rands, M. R. W. and Southerton, N. W. (1986) Pesticide use on cereal crops and changes in the abundance of butterflies on arable farmland in England. *Biol. Cons.* **36**, 71-82.

Robson, J. E. (1902) A Catalogue of the Lepidoptera of Northumberland, Durham and Newcastle. I. Macrolepidoptera. *Trans. Nat. Hist. Soc. Northumberland, Durham and Newcastle* **12**, 1-318.

Sheail, J. (1985) *Pesticides and Nature Conservation : The British Experience 1950 - 1975.* Oxford : Clarendon Press.

Sly, J. M. A. (1977) Changes in use of pesticides since 1945.
In : Perring, F. H. and K. Mellanby (eds.) *Ecological Effects of Pesticides.* Linnean Soc. Symp. Series No. 5 pp 1-6.

Sotherton, N. W., Rands, M. R. W. and Moreby, S. J. (1985) Comparison of herbicide treated and untreated headlands on the survival of game and wildlife. *Proc. Br. Crop Prot. Conf.* 1985, 991-8.

Thompson, G. (1980) *The Butterflies of Scotland.* London : Croom Helm.

Wailes, G. (1858) A Catalogue of the Lepidoptera of Northumberland and Durham. *Trans. Tyneside Naturalists Field Club* **3**, 189-234.

EUBLEMMA KETTLEWELLI AND *E. UHLENHUTHI* (LEP.: NOCTUIDAE) TWO NEW SPECIES FROM AFRICA NEAR *E. REDUCTA* (BUTLER)

By E. P. WILTSHIRE*

Summary

Eublemma kettlewelli sp.n. from Southern Africa and *Eublemma uhlenhuthi* sp.n. from Ethiopia, are described and illustrated. They may be placed after *Eublemma reducta* (Butler) and are eremic elements of the *Eublemma olivacea* (Walker) group, with atypical habitus.

Eublemma kettlewelli sp.n. (Figs.1, 2, 5, 6).

Diagnosis: span 20-30mm,; forwing with dark median shade running outwards obliquely from costa and widening but not united to the dark terminal field. There is a conspicuous whitish basal streak.

Description : antenna of male, with dense cilia, longer than width of shaft; of female, simple. Proboscis, reduced. Vertex of head light bistre. Palp, well developed, grey-brown laterally, shaggy-scaled except on the finer third segment which is quite long.

Forewing mostly pale bistre, but lightly powdered with rosy brown above the cell to about 1/3 and also in the subapical triangular patch; costa, marked by two oblique faint olive dashes not reaching beyond the median nervure, before the dark olive-green median bar which also runs outwards towards the tornus and is widest at its most distal point, where a pale rounded submarginal line, indicated above by isolated dots, separates it from the olive-green subterminal line; the latter varies in width and may contrast with the pale terminal line. Fringe, darker grey basad. A suffused white basal streak almost bisects the olive-green dorsal area but does not reach the median bar. The isolated subapical triangular dark patch contains a pale bistre streak which is the start of the discontinuous submarginal line. The proximal and distal borders of the patch are both wider. In some examples there is a fine black spot in the cell.

Hindwings of male white with light brown termen and fringe; of female, pale olive-brown, with two whitish postmedian lines, darker terminad.

Male genitalia with parallel costal and ventral valve-borders, and rounded tip without corona; harpe medial, sclerotised, like a crooked finger. Uncus normal, aedeagus vesica without cornutus.

Female genitalia – ostium with straight posterior edge, and antrum a shallow, lightly sclerotised bowl. Bursa copulatrix without signum, tapering and spiculated towards the entry of the ductus bursae.

HOLOTYPE Male (Prep. WBM. 320) Botswana ("Bechuanaland") Upington, 12.iii.1950 (H. B. D. Kettlewell) in British Museum (Natural History).

*Wychwood, High Road, Cookham Rise, Berks. SL6 9JS.

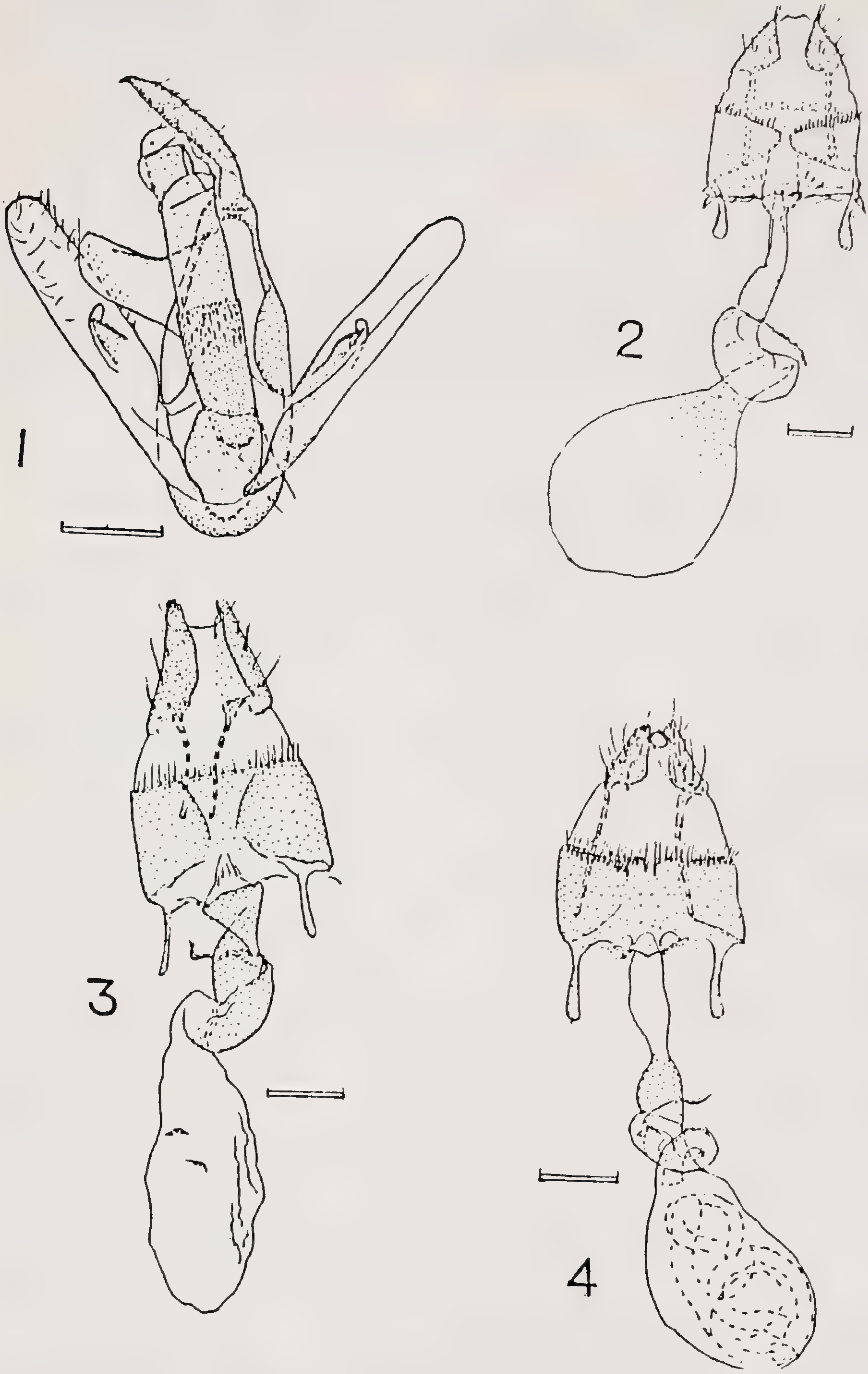

Fig. 1 *Eublemma kettlewelli* sp. n. Holotype. Male genitalia.
Fig. 2 *Eublemma kettlewelli* sp.n. Paratype. Female genitalia.
Fig. 3 *Eublemma uhlenhuthi* sp.n. Holotype. Virgin female genitalia.
Fig. 4 *Eublemma reducta* Butler. Impregnated female genitalia (scale bars = 0.5 mm).

Figs. 5-8. Fig. 5 *Eublema kettlewelli* sp.n. Male Holotype. Fig. 6 *E. kettlewelli* sp.n. Female. Paratype. Fig. 7 *Eublemma uhlenhuthi* sp.n. Female. Holotype. Fig. 8 *Eublemma reducta* Butler (Abyssinia). Male. (all figures x2).

PARATYPE Female (Prep.WBM.14) South Africa: Kuis of Malopo, 14.iv.1928 (J. C. Faure); Cape Province, Geluk, male and female, 13.xi.1961 (L. Vari); Orange Free State, Michville, female 29.1.1930 (H. K. Munro); Bloemfontein male 20.iv,1920 (H. E. Irving); Botswana, V-L Kalahari Expedition, Gomodini, 2 males, 1-5.iv.1930 and Kuko Pan 21-30.iii.1930. All in Transvaal Museum, Pretoria, South Africa.

Eublemma uhlenhuthi sp.n. (Figs. 3, 7)

Diagnosis : Span 20 mm. Forewing rosy beige, lacking the horn-shaped mark typical of E. *reducta* (fig. 8), having instead a smaller, blackish L-shaped mark ; hindwing with grey cell-spot absent in *reducta* and paler than the female *reducta*. Bursa copulatrix with signa, lacking in *reducta*. (fig. 4).

Description : Male unknown. Antenna of female with dense short cilia. (cf. *reducta* female which has sparse short cilia); proboscis much reduced, as in *reducta*; palp, all segments with shaggy adpressed scales, slightly shorter on the third segment. Thorax and upperside, rosy beige, the costa not darker

suffused as in *reducta;* two feint, paler, wavy cross-lines can be traced, one medial and the other submarginal; termen, a paler line edged proximally with paler dots at the nervure ends. Fringe, pale grey. Hindwing paler than in *reducta* female, with grey cell-spot, and with feint traces of a pale submarginal line.

Female genitalia : anal papillae longer and more acute than in those of *reducta*, the ostium and ductus bursae more sclerotised. Bursa copulatrix, long oval, with two medial distally-located transverse linear signa in the form of a scobinated ridge. There are also some less sclerotised longitudinal wrinkles with incipient spiculation.

HOLOTYPE female (Prep. WBM. 373): Abyssinia, Dire-dawa, iv.1936, (H. Uhlenhuth) in British Museum (Natural History). The unique type was taken together with many *E. reducta*, with which it remained confused for years.

Acknowledgements

My thanks are due to members of the staff of the British Museum (Natural History), particularly to the photographic department and to Dr. I. W. B. Nye; and also to Dr. Lajos Vari of the Transvaal Museum, Pretoria who so readily co-operated in this and other studies by loaning various African specimens.

CERAMICA PISI L. (LEP.: NOCTUIDAE) : LARVAL FOODPLANT PREFERENCES –Most of the textbooks cite a number of larval foodplants for this moth, but rarely local preferences. Useful and interesting detail appears in J. Chalmers-Hunt (*Butterflies and Moths of Kent* 2, 1968) and L. and K. Evans (*A Survey of the Macro-lepidoptera of Croydon and N. E. Surrey,* 1973), and surely such works are those in which such information should appear. Perusal of some of the local Lepidoptera lists which have appeared in recent years proved disappointing, such knowledge being absent or even in some cases a matter of guesswork and fiction!

I became acquainted with *pisi* larvae in the 1930s on Dartford Heath, Kent where I found them commonly upon broom (*Cytisus scoparius*) and bracken *(Pteris aquilina*); later I found them defoliating small birches *(Betula sp.)* on waste ground adjacent to Dartford Heath where bracken and broom were absent, and feeding on sea aster (*Aster tripolium)* in some numbers on the Dartford Marshes. On July 31st 1987 near Rinnamona in the Burren of Co. Clare I found the larvae not uncommonly upon bog myrtle (*Myrica gale*), and despite searching, none upon scabious, bracken or other plants growing in the vicinity. On August 3rd more were found on bog myrtle, but on no other plants, near Manorhamilton, Co. Leitrim. Regarding the Burren, bog myrtle is a very local plant, but *C. pisi* is widespread, so what preference does it have elsewhere in that region I wonder? – B. K. WEST, 36 Briar Road, Darfford, Kent.

THE DIPTERA (SYRPHIDAE) OF THE SANDWELL VALLEY

By M. G. BLOXHAM*

Introduction

This paper is the second in a series listing the Diptera of the Sandwell Valley, West Bromwich. The first (Bloxham 1981) lists the calypterates of the area and the reader may refer to it for geological, ecological and methodological data still applicable to this part.

As many entomologists will know, the study of hoverflies, especially their identificiation and distribution, has been greatly facilitated by the recent publication of *British Hoverflies* by Stubbs and Falk (1983). This, together with earlier works by Verrall (1901) and Coe (1953), has enabled workers here to compile with some confidence a considerable list of local hoverflies. For the purpose of comparison, a glance at other local Midland hoverfly records is of interest. Rotheray (1979) gives the Staffordshire syrphids and his work draws in part on records from the Sandwell Valley, some 82 from that locality being mentioned. Since that work was published, the number of species found here has considerably increased and the present offering may be of value in supplementing some of the data given there. His total of 145 Staffordshire hoverflies may now be increased as a consequence of the addition here of 7 extra species these being *Metasyrphus latilunulatus, Ferdinandea ruficornis,Orthonevra brevicornis, Anasimyia contracta, Eumerus tuberculatus, Pipizella varipes* and *Xylota tarda.* There is additional data to the effect that *Eumerus tuberculatus* has been recorded in a garden at Newcastle (Staffs.) by C. W. Plant. Mr. D. W. Emley reports the discovery by R. A. Tribbeck of *Tropidia scita* at Aqualate. It is probable therefore that the Staffordshire hoverfly list now stands at 152 species.

Further reading concerning the hoverflies of the Birmingham area may be found in Payne (1980) on the R. C. Bradley collection of hoverflies, mainly from Sutton Park. Pugh (1977) provides another substantial species list from Clowes Wood. He tells me that since the publication of that paper, fifteen more hoverfly species have been found there, giving an updated total of 93 species from the site. These lists, together with the one given here, may well be considered to give a reasonably accurate picture of the hoverfly fauna of the Greater Birmingham area, for Sutton Park lies just to the North of the city, Clowes Wood being approximately South and the Sandwell Valley is to the West. The three sites provide a total of 149 different hoverflies and if *Xanthogramma pedissequum* (found

*1 St. John's Close, West Bromwich, W. Midlands.

in Moseley) is added, the grand total of 150 species obtained probably conforms with expectations, given the geographical location of Birmingham.

The data given for each species includes assessment of abundance, given by the following declining sequence; very common, common, frequent and several specimens. For species captured only once, the date of capture is given. For those in the other four categories, the month(s) of occurrence is indicated. The names of specialists who have checked identifications are given at the end of this paper. Their initials appear in parenthesis after certain species in the list indicating confirmation of the same. Additional information on some species is provided in the discussion. The arrangement and Nomenclature follow Stubbs and Falk (op. cit.).

Species List

SYRPHIDAE: SYRPHINAE: BACCHINI

Bacca obscuripennis Mg. common 6-8; *Melanostoma mellinum* L. frequent 5-8; *M.scalare* Fab. very common 5-8; *Pachysphyria ambiguus* Fall. 26.5.84; *Platycheirus albimanus* Fab. common 5-8; *P. angustatus* Zett. common 5-7; *P. clypeatus* Mg. common 5-8; *P. fulviventris* Macq. 15.8.77; *P. manicatus* Mg. frequent 5, 6; *P. peltatus* Mg. frequent 6-9; *P. perpallidus* Verr. several 6; *P. scutatus* Mg. frequent 5-7; *Pyrophaena granditarsa* Forst. frequent 5-7; *P. rosarum* Fab. several 6-8.

SYRPHINI

Chrysotoxum bicinctum L. frequent 6-8; *C. festivum* L. frequent 6-8; *Dasysyrphus albostriatus* Fall. frequent 5-8; *D. lunulatus* Mg. 3.6.73; *D. tricinctus* Fall. frequent 5-9; *D. venustus* Mg. frequent 5, 6; *Epistrophe elegans* Harr. frequent 5, 6; *E. grossulariae* Mg. frequent 6-8; *E. nitidicollis* Mg. several 5, 6; *Episyrphus balteatus* Deg. very common 6-9; *Leucozona* s. *Ischyrosyrphus glaucia* L. frequent 7-9; *L.s.I.laternaria* (Mull.) frequent 6-8; *L.s.Leucozona s.s.lucorum* L. common 5-8; *Melangyna compositarum* Verr. several 6-9; *M. labiatarum* Verr. several 6, 7; *M. lasiophthalma* Zett. several 3, 4; *M. umbellatarum* Fab. several 7-9; *Meligramma cincta* Fall. common 5-8; *M. guttata* Fall. several 6-8; *M. triangulifera* Zett. several 7-9; *Meliscaeva auricollis* Mg. frequent 4-8; *M. cinctella* Zett. frequent 5, 8, 9; *Metasyrphus corollae* Fab. common 7, 8; *M. latifasciatus* Macq. frequent 7, 8; *M. latilunulatus* Collin. 29.v.83 (A.E.S.); *M. luniger* Mg. common 4-9; *Parasyrphus punctulatus* Verr. several 4, 6. *Scaeva pyrastri* L. frequent 7, 8; *Sphaerophoria menthastri* L. several 7; *S. rueppellii* Wied. several 7; S. *scripta* L. frequent 7-9; *Syrphus ribesii* L. common 5-9; *S. torvus* O-S. several 6, 7, 9; *S. vitripennis* Mg. common 5-9.

MILESIINAE

Cheilosia albitarsis Mg. frequent 5, 6; *C. bergenstammi* Beck. 11. viii.85; *C. grossa* Fall. several 4; *C. honesta* Rond. 30.v.84; *C. illustrata* Harris frequent 7, 8; *C. impressa* Lw. frequent 5-9; *C. intonsa* Lw. several 5, 8, 9; *C. pagana* Mg. common 6-9; *C. scutellata* Fall. frequent 7, 8; *C. variabilis* Panz. 5, 6; *C. velutina* Lw. several 8 (A.E.S.); *C. vernalis* Fall. frequent 4-8; *C. proxima* Zett. several 5-8. [the current status of *proxima* is uncertain. Records may include more than one species]. *Ferdinandea cuprea* Scop. several 6, 8; *F. ruficornis* Fab. 29.iv.84. (S.J.F.); *Rhingia campestris* Mg. frequent 4-8.

CHRYSOGASTRINI

Brachyopa scutellaris R-D. several 6; *Chrysogaster chalybeata* Mg. frequent, 7; *C. hirtella* Lw. common 5, 6; *C. solstitialis* Fall. frequent 7, 8; *Lejogaster metallina* Fab. frequent 5, 6, 8; *Neoascia meticulosa* Scop. frequent 4, 5, 6; *N. podagrica* Fab. common 5-9; *N. tenur* Harris frequent 5, 6, 8; *Orthonevra brevicornis* Lw. 1.vi.80; *O. nobilis* Fall. 30.v.82; *O. splendens* Mg. common 7, 8; *Sphegina clunipes* Fall. several 5, 8, 9; *S. kimakowiczi* Strob. several 7, 8.

ERISTALINI

Anasimyia contracta Claus. & Torp. several 7, 8; *A. lineata* Fab. several 7; *A. transfuga* L. several 6, 7, 8; *Eristalinus sepulchralis* L. frequent 5-8; *Eristalis S. Eoseristalis abusivus* Collin. 14.vii.84 (S. J. F.); *E. arbustorum* L. frequent 7, 8; *E. horticola* Deg. common 7-9; *E. intricarius* L. frequent 3-7; *E. nemorum* L. several 8; *E. pertinax* Scop. frequent 5-9; *S. Eristalis ss tenax* L. common 4-10; *Helophilus hybridus* Lw. several 7, 8; *H. pendulus* L. common 4-10; *Mallota cimbiciformis* Fall. 22.vii.78; *Myathropa florea* L. frequent 5-8; *Parhelophilus frutetorum* Fab. several 6, 8; *P. versicolor* Fab. several 5, 7, 9.

MERODONTINI

Eumerus strigatus Fall. frequent 6-8; *E. tuberculatus* Rond. several 6; *Merodon equestris* Fab. frequent 6.

PIPIZINI

Heringia heringi Zett. frequent 5-8 (G.E.R.); *Neocnemodon vitripennis* Mg. several 6, 8, 9; *Pipiza austriaca* Mg. several 6, 7, 8; *P. fenestrata* Mg. 2.vi.77 (G.E.R.); *P. luteitarsis* Zett. several 5, 6 (G.E.R.); *P. noctiluca* L. several 5; *Pipizella varipes* Mg. frequent 6-8 (A.E.S.); *Triglyphus primus* Lw. several 7, 8 (G.E.R.).

VOLUCELLINI

Volucella bombylans L. frequent 6, 7; *V. pellucens* L. frequent 6-8.

XYLOTINI

Brachypalpoides lenta Mg. 3.vi.77; *Chalcosyrphus* s. *Xylotina nemorum* Fab. frequent 5-7; *Criorhina floccosa* Mg. several 5, 6; *Syritta pipiens* L. common 5-8; *Xylota segnis* L. common 6-8; *X. sylvarum* L. frequent 6-8; *X. tarda* Mg. 1.x.81.

Discussion

BACCHINI

Of the species found, *Platycheirus fulviventris* and *P. perpallidus* are the least common. It may well be that the former was once regularly seen, as a considerable marshy area used to exist on the only site where it was found. Unfortunately, flooding of this to produce a lake changed the nature of the area and altered the habitat. Certainly no recent records for *P. fulviventris* exist although *P. perpallidus* is still present and is regularly seen flying over water in a well established bed of *Carex acutiformis.*

SYRPHINI

Both *Chrysotoxum* species mentioned are regularly found in a wide variety of habitats and the genus *Dasysyrphus* is well represented with *D. albostriatus* exhibiting some variation, spring specimens often having reduced markings (figure 1). *D. lunulatus* is apparently uncommon and no recent records exist (changes Of land use have been considerable since the 1973 record), but the other *Dasysyrphus* species are present in good numbers. *Epistrophe grossulariae* appears to have flourished in warmer summers, 1983 and 1984 both being excellent years, very good years also being reported for *Ischyrosyrphus glaucia* (1981) and *L.laternaria* (1982). At present it is considered a difficult matter to separate *Melangyna compositarum* from *M. labiatarum* and whilst examination of local material suggests that both species are indeed present, re-examination will be necessary when a more comprehensive key to the genus appears. *Meligramma guttata* and *M. Triangulifera*, nationally scarce hoverflies, occur occasionally, the former being found on hogweed whilst the latter has been taken on flowering privet on three occasions in woodlands. The common *Meliscaeva auricollis* exhibits a considerable range of variation in abdominal pattern, var. *maculicornis* being not infrequent. The solitary *Metasyrphus latilunulatus* specimen was found in company with other hoverflies on the flowers of field maple. *Sphaerophoria* species of the district have yet to be studied in detail; *S. rueppellii* has, however, always been taken on open meadows.

CHEILOSIINI

It is probable that a more systematic survey will reveal more

Cheilosia species. Examination of *Senecio squalidus* flowers revealed *Cheilosia bergenstammi.* The larvae of this insect are reported as using *Senecio* spp as food plants and there may well have been such a relationship in the case given here. *C. grossa* is occasionally seen on *Salix caprea* early in the year but sightings are very dependent on the state of the weather. *C. intonsa* appears to be uncommon locally, those captured all occurring in a marshy area adjoining a fast flowing stream. Marsh Thistle which acts as host plant for several *Cheilosia* species, is absent from this particular site so it probably does not play a similar role in the life history of this fly. *C. velutina*, a little known fly, has been taken on hogweed and fennel. It seems to have a preference for recently disturbed ground. both *Ferdinandea* species occur in the valley, an exceptional state of affairs. *F. cuprea* shares a solitary damaged ash tree with *Brachyopa scutellaris* and both flies seem to be confined to that limited habitat, while *F. ruficornis* has been taken once on a damaged birch tree in an area of beech – birch woodland undisturbed in recent memory. There is some evidence that this fly may not be quite as rare as past records would suggest. Mr. Nigel Jones has just recorded it from the Wyre Forest and that, together with other recent records, would suggest at least a scattered distribution throughout England. Any information to throw further light on this matter would be welcome.

CHRYSOGASTRINI

Brachyopa scutellaris (previously mentioned) appears to have one of the most limited yet predictable flight periods of hoverflies recorded here, appearing at the beginning of June and vanishing as if by magic, by the middle of the month. It was only discovered because I happened to pass the right tree at the right time. Goffe (1944) and Edwards (1952) both recorded it from gardens. These presumably would be regularly patrolled so one can assume that the chances of spotting an insect with so limited a flight period would be much enhanced in such a setting. Once again, observations on the appearances of this fly would be of considerable value. The other members of the tribe mentioned in our records are much more likely to be seen during a snap visit to the valley as the abundance of damp areas with lush vegetation provide an ideal habitat for them.

ERISTALINI

Anasimyia contracta is known to be closely associated with *Typha latifolia* and this is corroborated in the Sandwell Valley as it has only been found in *Typha* localities, while *A. lineata* and *A. transfuga* have occurred in areas well away from any reedmace. Both the latter named insects have been taken flying together in some numbers over the root mats of a large patch of yellow iris

at the margin of a lake. The genus *Eristalis* has representatives appearing in considerable numbers on the site throughout the warmer months, *Eoseristalis abusivus* being the unexpected find. This is not the first Staffordshire record however, for it has been discovered on a similar site at Sugnall (Rotheray 1979). It has a predominantly coastal distribution and may have been brought into the area via the M.5 Motorway which is not far away (there are several other insect records, including Coleoptera, which suggest local colonization along the motorway system here). The same pattern may occur when other *E. abusivus* records are examined. *Mallota cimbiciformis* has been observed on one day only, when several flies were seen moving rapidly over brambles, very short rest periods being taken between flights. Unfortunately, the site from which they were recorded has been heavily disturbed by excavation. The two *Parhelophilus* species present have somewhat similar flight characteristics to *M. cimbiciformis*. They are fortunately quite well established in the area. *P. frutetorum* does not seem to quite so attached to damp localities as *P. versicolor* and has been taken at woodland margins some distance from water.

MERODONTINI

Of the two *Eumerus* species recorded, *E. tuberculatus* has so far been found only in gardens in the Sandwell Valley, the other records from Staffordshire (mentioned in the introduction) also being from gardens. *E. strigatus*, however, has been found in a wider variety of habitats as has *Merodon equestris*, the large bulb fly, isolated specimens of which are liable to turn up anywhere in June, var. *equestris* and var. *narcissi* being the predominant forms.

PIPIZINI

It is difficult to estimate the abundance of flies in this tribe because identification in the field is problematic (often impossible). In the case of *Pipiza*, only *P. austriaca* can be recognized with any degree of confidence. In spite of this, there is some evidence that the locality is a stronghold for the genus as a whole. Especially noteworthy are the records for *Triglyphus primus*. Jeffries (1976) lists known records for this fly, the information given suggesting that it is very catholic in its choice of habitat. The Sandwell specimens taken as follows bear this out : 24.8.78. hogweed in hawthorn scrub; 4.7.82. golden rod by M5 motorway, 18.8.82. hogweed by a path in ancient woodland, 16.8.84. on hogweed at the fringe of a marshy area, 16.6.85. on broom, 8.7.85. numbers present on bramble, 25.8.85. on bramble.

In spite of these sightings, pinning down characteristic habits or habitats for this fly is difficult. One feature seems to be that in hot weather, it hovers at the interface of sun and shade, moving

very rapidly to the place where it is going to alight and vanishing with equal alacrity into the twilight. In cooler conditions it sits tight and sweeping probably gives the entomologist the best chance of securing it. Coe (op. cit.) gives information about the discovery of *T. primus* larvae on mugwort (*Artemesia vulgaris* L) in company with the aphid *Cryptosiphum artemisiae* (Buckton) on the continent. There is abundant mugwort in the Sandwell Valley although the presence of the aphid named has not yet been confirmed. It is therefore possible that a similar relationship exists here, but the variety of different places where the fly has been found, some at a distance from mugwort, suggests that a more general association with aphids is a distinct possibility. At any rate, the local success of this otherwise rare species is a matter giving cheer to otherwise embattled conservation persons!

VOLUCELLINI

Both *Volucella* species are present in good numbers, *V. pellucens* having been bred in numbers from a *Vespula vulgaris* nest taken locally. *V. bombylans* is present in both forms normally with var. *plumata* much the more common. In 1985 no var. *bombylans* was seen although var. *plumata* was quite common.

XYLOTINI

The very distinctive *Brachypalpoides lenta* has been taken once in an area of more ancient woodland for which it must surely be considered a marker species. Of the other flies mentioned *Criorhina floccosa* is a conspicuous insect fluctuating considerably in numbers from year to year. The very uncommon *Xylota tarda* was taken on Himalayan balsam.

Conclusions

The hoverfly fauna of the Sandwell Valley is a rich one reflecting the vegetation and geology of the area. There are reasonably well-marked seasonal fluctuations in the numbers of some species but no particular reasons for these can be given although climatic factors must must have some bearing on the situation. Several uncommon or rare species are present, one (*Triglyphus primus*) being on site in sufficient numbers to raise hopes that further details of its life history may be uncovered in the near future.

Following changes in land use at regular intervals, much of the locality is now settling down, with well-marked succession of vegetation taking place. In the course of time this will almost certainly bring changes in the hoverfly fauna. Study of these may enable a few firmer conclusions to be reached on the ecology of some of the species concerned.

Acknowledgements

I would like to thank Mr. A. E. Stubbs for his assistance in preparation of the manuscript and for checking identifications in certain cases. Thanks also go to Mr. S. Falk and Dr. G. E. Rotheray who have also helped in identification work. Finally I am also indebted to Mr. R. G. Payne and Mr. D. Emley for assistance in the field and in the compilation of the records.

Postscript

Since the preparation of this manuscript six further species of hoverfly have been found in the Sandwell Valley, and are as follows:

Xanthandrus comtus Harris 27.9.87; *Didea fasciata* Macquart 20.9.87; *Sphaerophoria batava* Goeld. 29.8.87; *Sericomyia silentis* Harris 29.8.87; *Criorhina berberina* Fab. 1.6.87 and *Criorhina berberina* f. *oxyacanthae* Meigen 5.6.87. I am indebted to Stephen Falk for checking the identitu of *S. batava.* The discovery of *X. comtus* is another sign that this insect, so uncommon in recent years, is increasing its numbers again. Its addition to the Staffordshire list by Brian (1987) gives additional support for this view.

The last two flies in the above list are new to the Staffordshire list. A further six species, *Platycheirus* s.s. *tarsalis* Schummel (Keele), *Paragus haemorrhous* Mg. (Cannock), *Chelosia vulpina* Mg. (Loynton Moss), *Lapposyrphus lapponicus* Zett., species A (Stafford), *Neoascia geniculata* Mg. (Ford Green) and *P. obliqua* Coe (Stafford) bring the total number of hoverflies recorded from Staffordshire to 161 species.

References

Bloxham, M. G. (1981). The Diptera (Calyptratae) of the Sandwell Valley, West Bromwich. *Entomologist's Rec. J. Var.* **93**: 183-184.

Brian, M. C. (1987). *Xanthandrus comtus* (Harris) (Diptera: Syrphidae) new to Staffordshire. *Entomologist's Rec. J. Var.* **99**: 131.

Coe. R. L. (1953). Diptera, Family Syrphidae. *Hanbk. Iden. Br. Insects* **10** (1) : 1-98.

Edwards, J. (1952) Notes of Diptera. *Trans. N. Staffs. Field Club* **86**:76

Goffe, E. R. (1944). *Brachyopa scutellaris* (Dipt. Syrphidae) in a cottage garden. *J. Soc. Br. ent.* **2**(6): 225.

Jeffries, M. G. (1976). The distribution of *Triglyphus primus* Loew in Britain. *Entomologist's mon. Mag.* **111**: 61.

Payne, R. G. (1980). The hoverflies of the West Midlands County – a list of Diptera Syrphidae in the R. C. Bradley collection, Birmingham City Museum. *Proc. Birmingham Nat. Hist. Soc.* **24** (2) : 93-98.

Pugh, M. N. (1977). The hoverflies of Clowes Wood nature reserve Warwickshire. *Proc. Birmingham. Nat. Hist. Soc.* **23** (4)

Rotheray, G. E. (1979). *Atlas of the Diptera of Staffordshire.* Pt. 1. Hoverflies. City Museum, Stoke-on-Trent.

Stubbs, A. F. and Falk, S. J. (1983). *British Hoverflies.* 253pp. London.

Verall, G. H. (1901). *British Flies.* **8.** Syrphidae etc. 691 pp. London.

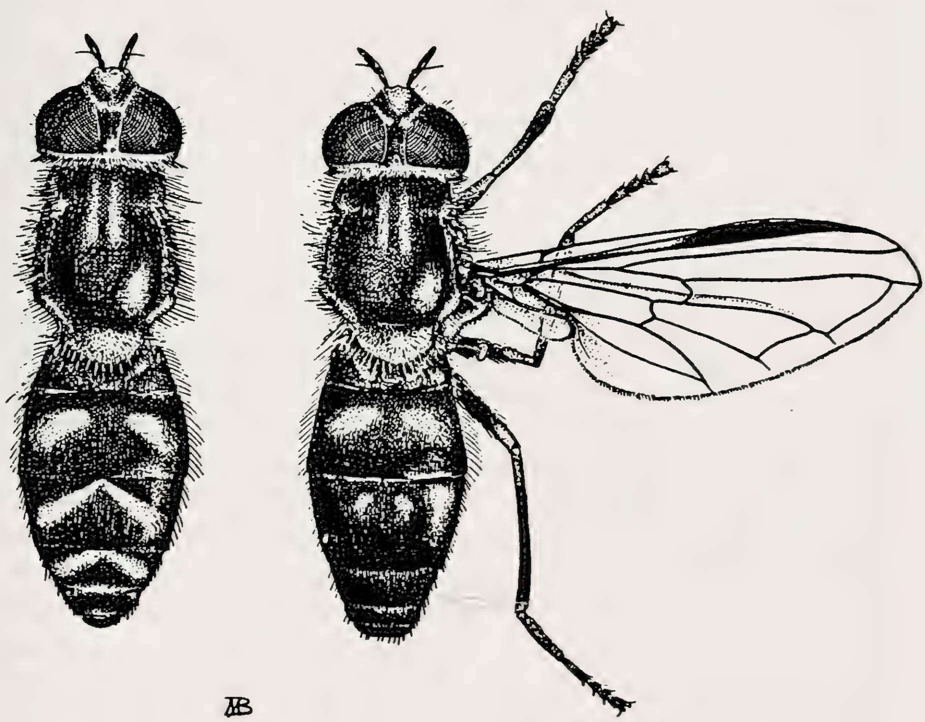

Fig. 1 *Dasysyrphus albostriatus* Fall. Spring specimen on right.

DAHLICA (=SOLENOBIA) TRIQUETRELLA HBN. (LEP.: PSYCHIDAE) IN SOUTH ESSEX – It seems worth recording the presence of this species at Grays Chalk Quarry, South Essex during May 1986, when I collected two cases from the underside of a single piece of "breeze-block" dumped at the side of a hardcore track. The only previous record for either of the two Essex vice-counties appears to be that made by the Rev. C. R. N. Burrows who took cases at Mucking in 1919. However, both Hattenschwiler (in *Moths*

and Butterflies of the British Isles vol. 2 Harley Books, 1985) and Emmet *(The Smaller Moths of Essex* Essex Field Club, 1981) regard this as a doubtful record. Elsewhere in Britain, where only the parthenogenetic form of the female in encountered, there are confirmed records from the West Kent and Westmoreland vice-counties alone – a rather remarkable, and highly improbable, disjunct distribution – with further unconfirmed reports from Durham, South Lancashire and Cheshire. It seems quite possible that diligent searching will eventually add to the vice-county distribution map for this species.

The two cases from Grays measure 8.5 x 2.8mm and 7.9 x 2.5mm respectively, (maximum measurements). The use of the native chalk, as well as tiny particles of concrete to decorate the cases has rendered them highly cryptic against the breeze-blocks upon which they were found. Once detected however, there is no other British Pyschid whose case is markedly triangular in section, tapered at *both* ends, constructed of "sand" grains rather than lichen and adorned with the remains of dead insects at the head end. I am grateful to Lt. Col. Emmet for confirming my identification of these two cases. COLIN PLANT, Passmore Edwards Museum, Romford Road, Stratford, London E15 4LZ.

GEOSTIBA CIRCELLARIS GRAV. (COL.: STAPHYLINIDAE), A RIVAL TO THE BOMBADIER BEETLE? – For some years now I have been investigating the Coleoptera of moss and leaf litter, and have frequently encountered *Geostiba circellaris* – the first occasion being some 20 years ago in Black Wood, Rannoch. It is my custom to examine handfulls of moss or litter one at a time on a tray, using a small brush to ease beetles into a tube. I noticed at times a fleeting but markedly unpleasant, rather lavatorial smell, apparently associated with a small staphylinid that I later identified as *circellaris*. When "attacked" by a small brush a beetle would become agitated, sometimes stopping and elevating its abdomen and emitting a vapour which could clearly be smelt. The abdomen is occasionally raised when the beetle is on the move.

I have since observed this behaviour in specimens from many localities, from southern England to the Scottish highlands. Presumably the function of this behaviour is defensive, but I have not observed similar behaviour in other staphylinids. Species of the genus *Zyras* are reported to behave in a similar manner, but I have only rarely come across this genus, and all specimens have behaved normally – perhaps they only emit vapours in the presence of ants or other predators? Perhaps other coleopterists have noticed similar behaviour in other staphylinids? P. D. ORTON, 22 Lyewater, Crewkerne, Somerset TA18 8BB.

AN INTRODUCTION TO GUERNSEY LEPIDOPTERA

By T. N. D. PEET*

Visiting entomologists have contributed greatly in recent years to our knowledge of Guernsey insects, and these notes may whet the appetite of more potential visitors to these islands. There is a long tradition of entomological study here going back to William Luff (of *Luffia* fame) who pursued both moths and beetles in late Victorian times, and the Rev. F. E. Lowe who first discovered the now ubiquitous *Cacoecimorpha pronubana* in the 1880's. Light trapping has certainly increased the total on our local lists, particularly of migrants, but the micros remain very under-worked, as demonstrated in 1982 when Rev. David Agassiz added 40 species to the Guernsey list during a two week summer holiday.

Ecologically, Guernsey is part of the Brittany coast. Many insects, birds and plants exist here at the northern edge of their range; such as the Glanville fritillary *Melitea cinxia*, the Dartford warbler, and the loose-flowered orchid, *Orchis laxiflora*. The area of the island is tiny, and habitats very limited. In particular, there is no real woodland and very little freshwater or marshland. Guernsey has a small group of moths which might be called five star resident rarities. These are insects unknown as breeding moths on the British mainland, but not uncommon here.

Scotopteryx peribolata, the Spanish carpet, thrives particularly on our cliffs, and also in gardens. It can be put up from broom by day, and is relatively frequent to m.v. light. The optimum time to find the adult moth is early September, eggs are readily laid and larvae may be reared on broom.

Thera cupressata, the Cupressus carpet, is a recent discovery, undoubtedly resident here. The first adults were taken at m.v. in October 1985, again at the same site in July 1986, wild larvae were found on *Cupressus* in September 1986, and again in September 1987. in addition, an adult moth was taken on Alderney in October 1986. The species may well be moving northwards in the manner of *Eupithecia phoeneciata* and *Lithophane leautieri hesperica* (both of which are common here).

Agrotis crassa, the great dart, is a very occasional migrant to the mainland, but is a well established resident on Guernsey. It was rediscovered by Agassiz in 1982, the original records go back to Luff in 1875. I have seen only one example to my garden trap here on

*Le Chêne, Forest, Guernsey, Channel Isles.

the south coast cliffs, the moth appears to like wet,, marshy areas in low-lying areas of the north of the island. Six or eight examples may be seen on any one night during its short emergence period, which is the first two weeks of August. It is not difficult to persuade females to lay, but larvae on carrot died half grown during winter hibernation.

A common October moth is *Trigonophora flammea*, the flame brocade. This is frequent to m.v. all through the month, even coming to lighted windows. I had no success at obtaining eggs despite providing elaborately suitable conditions – or so I thought. Only when a fellow enthusiast, Dr. Peter Costen, demonstrated that I was boxing male moths, and that correctly sexed females will lay: then eggs were obtained. Subsequent larvae were successfully over wintered on *Ranunculus* by Mr. Jim Reid.

The resident species about which least is known is *Hypena obsitalis*, the Bloxworth snout. This is best found in outhouses, sheds and garages, has been noted in a cave here, and in an old German bunker. I have not seen it at m.v. and have not tried to breed it. Specimens turn up through most of the summer months.

Polyphaenis sericata (which has as yet no English name) was taken at sugar by Luff in the 1870's, and his series is still extant. The moth was rediscovered at Petit Bot in 1986. Perhaps it has been here through the intervening one hundred years: certainly the habitat has not changed much. We look forward to working for it in 1988. Likewise, the search for *Eupithecia ultimaria*, the Guernsey Pug will continue. A single adult of this moth was taken in 1984, and the tamarisk-feeding larvae noticed in late summer of 1986. But all larvae died, and no-one here has had time to search again during 1987.

Illustrations of the above insects can be found as follows:

S. peribolata, A. crassa, T. flammea, H. obsitalis are all in Skinner's *Moths of the British Isles. T. cupressata* is shown in black and white photograph (*Ent. Rec.* **98**: 217). Both *T. cupressata* and *P. sericata* appear in colour on Plate V of *Proc. Trans. Br. Ent. Nat. Hist. Soc.* **20** (1987). *E. ultimaria* is illustrated by a drawing on p. 259, and a black and white photograph Plate 9 of *Ent. Gaz.* **36** (1985).

Though the microlepidoptera are underworked, I have selected some less usual insects. *Luffia lapidella* is locally very common, with the cases browsing on lichens on our granite walls. I have not seen the winged form: a collection of mature cases in a jar will suddenly

and disconcertingly produce a host of tiny grey cases. Another psychid found by accident four years ago is *Bankesia conspurcatella*, the adults flying in bright sunshine in the morning by my garage, in early April. David Agassiz takes the credit for finding *Nothris congressariella* larvae on balm-leaved figwort (*Scrophularia scorodonica*). His initial discovery was on Herm, but the larvae have now been noted on Guernsey. The moth is otherwise only known within the British Isles from the Scillies. Other good things selected at random include *Agonopterix rotundella*, quite common within the flower heads of wild carrot: *Crocidosema plebejana* larvae very common within the seeds of tree mallow: and three nice colonies of *Epischnia bankesiella* on golden samphire.

Guernsey's principle hedgrow tree is the Elm, and the island's management of Dutch Elm Disease is unique in Europe. By law, all infected trees are felled and burned each year, at no expense to the landowner. There is also an excellent free tree replacement scheme. As a result, the disease has been contained, and the entomologist benefits by frequent sights of *Cossus cossus* larvae (usually bought in from schools) and specimens of the imago to m.v. each summer.

The south-western coastal aspect of our moths is exemplified by many of the species for which friends in England migrate annually to Portland. *L-album, albipuncta, putrescens, oditis, australis* and *lichenea* all flourish here. *Caniola, trux* and *barrettii*, which I associate with North Devon, are likewise common, particularly *trux* with occasionally up to forty specimens in one night to m.v. in my garden.

Inter-insular rivalry is fierce, so I am debarred from calling *quadripunctaria* by its vernacular name. But it is a common moth, all through August, and particularly fond of resting by day on whitewashed walls. *Villica* likewise comes to light, but can also be found on the cliffs by day. *L. trifolii* is best found as a larva in early May, and not difficult to breed through in my experience. Adult males come sparingly to m.v. in late August. There are some moths whose status is open to discussion. *Ochrata, serpentata* and *pupillaria* have each been taken only once. They could be migrants, or residents at low density. I am not sure about *quadra,* which has intermittent years of plenty, then none are seen at all, followed by just two specimens, as in 1987.

A list of migrants would be tedious. Heart-stoppers range from *nerii* in 1983 to tiny delights such as *Agrotera nemoralis* in July 1982, or the totally unexpected *T. emortualis* in 1984. Annual pleasures include *unionalis, obstipata, vitellina* and *exigua.*

If moths pall, the island can offer other entomological excitements. The Mole Cricket *Gryllotalpa gryllotalpa* thrives on the lower, northern end of Guernsey, and is particularly fond of pota-

toes. The traditional way of ridding a greenhouse of crickets is to pour buckets of soapy water over the ground, forcing the crickets to the surface. One grower took three buckets of live crickets to the local aquarium last year, as fish food! This September in the sunshine I watched a large colony of Blue-Winged grasshoppers on a cliff path, a marvellous tonic before dark winter nights overtook us.

Our local enthusiasts, Dr. Peter Costen, Mr. & Mrs. Rich Austin and myself are always pleased to meet visiting entomologists, and I am grateful for their help in increasing our knowledge of Guernsey's insect fauna.

TETHEA FLUCTUOSA HBN. (LEP.: THYATIRIDAE) IN N. W. KENT. – This insect seems to have been a rarity in this section of the county; in the latter part of the 19th century and early years of the present one, only occasional specimens have been reported. Since the Second World War four singletons have been seen, at Bromley, Orpington and Farningham Wood (2). On July 9th 1987, a specimen was attracted to my garden m.v. light at Dartford, and was followed by others on July 10th (3), July 4th (1) July 15th (4) and July 19th (2). 1987 was the nineteenth year of running the light in this locality!

J. Chalmers-Hunt (*Butterflies and Moths of Kent* **3**: 240) comments 'Has increased markedly of late, especially in the Ham Street area, where it was unknown prior to 1955'. It is now common there, including melanic forms. The Dartford specimens were all typical. – B. K. WEST, 36 Briar Road, Dartford, Kent.

AN EARLY GLOUCESTERSHIRE RECORD OF THE CODLING MOTH CYDIA POMONELLA L. – During the 1840s, at least seven lady members of the Clifford family, who were at that time resident at Frampton Manor (about ten miles south of Gloucester), created some 200 drawings of local wild plants and related objects. During 1985, Century Hutchinson published reproductions of these, together with a Foreword by Richard Mabey, as *The Frampton Flora.* During 1987, whilst at the annual conference of the National Federation for Biological Recording at Bristol, I attended a civic reception at the Bristol City Museum, and here I was able to closely examine the original Clifford family paintings, which were hanging as a temporary exhibition. I was interested to note that picture number 75, of six "Old Pearmain" apples, reproduced on page 170 of *The Frampton Flora* was quite clearly afflicted with larvae of the codling moth *Cydia pomonella.* Though this picture is undated, it was certainly painted at some time during the 1840s, and as such provides an interesting early record. COLIN W. PLANT Passmore Edwards Museum, 29 Romford Road, Stratford, London E15 4LY.

NOTES ON *AGRILUS PANNONICUS* PILL. & MITT. (COL.: BUPRESTIDAE) IN 1985

By A. A. ALLEN *

Mr. A. P. Foster's extremely interesting rediscovery of this fine and rare *Agrilus* (=*biguttatus* F.) on Hampstead Heath two years ago (Foster, 1987) prompts some further remarks largely arising out of two visits to the site which I made in the following year, 1985. It will be seen that in most respects my experience agrees fully with his, whilst in one or two there appear to be noteworthy differences.

Having arrived on the spot around noon on 3rd July, I made a thorough inspection of the oak stump (prostrate and several feet in length) and the two logs, without seeing a single *Agrilus*; nor could any be swept, or seen in flight. The reason soon became clear: despite the hot sunshine, some very tall lime trees not far off were shading the stump, and the beetles for some reason seemed uninterested in the logs even with the sun full on them – none being seen on or near them either that day or the next. Accordingly I left the site, returing in about two hours when the stump would be in direct sunlight. It may here be mentioned that the common hoverfly *Xylota segnis* L. was so abundant on both days about the stump and logs as to be a nuisance, constantly catching the eye and distracting attention from the matter in hand in a most annoying fashion. However, with the stump now well insolated, it was not long before a flash of vivid blue, vanishing as suddenly as it had appeared, announced the presence of the desired insect.

Though this one immediately flew off again and was lost to sight, a second soon appeared as if from nowhere, and was successfully 'stalked' and secured. It took some two hours to obtain three specimens, two being missed through uncertainty as to the best way to set about capture. This I found to be not to try to use the net, but to wait for the beetle to settle (which fortunately seemed always to be upon the horizontal surface of the bark) and then to stalk it with the utmost stealth by hand, bringing down smartly over it a glass-topped specimen-box from which it could then be tubed. Like Mr. Foster I failed to capture an example either on the wing or by sweeping the surrounding vegetation. One, perhaps alarmed (understandably!) by my attempts to net it, appeared to fly straight upwards; otherwise on rising from the stump they veered off sideways out of sight. It is clear that to catch this wary insect in the field considerable patience is essential, even when it is present in numbers; when that is not so, it may well not be seen at all. I did not experience its habit of dropping to the ground simply because I never saw it settle on a vertical surface.

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The remarkable 'flashing' behaviour observed by Foster was witnessed by me also on this occasion. It seems to occur only on alighting, and, I believe, in both sexes; the elytra were opened and closed several times, but I never saw it lasting for some minutes as noted by Foster in the two partly deformed individuals. Perhaps, therefore, as he suggests, it was in this instance associated with failed attempts to fly, but in the ordinary way I think his second suggestion – that its function is sexual signalling – is probably correct. The smooth lustrous peacock-blue abdominal tergites are highly reflective, far more so than the rugose surface of the pronotum and elytra. This is also the case with *A. sinuatus* Ol., though they are there scarcely such a bright blue. I do not remember having noticed similar behaviour in that or the other British *Agrilus* species.

I was back at the spot next day, which was almost equally sunny and hot. This time *A. pannonicus* was not seen on the wing, but a further three were found, all sitting quietly on the stump towards the root end, and were captured with little trouble. They gave the impression of having just emerged from the bark, not least because all three had more than a trace of wood-dust at each side of the pronotum – in one, quite a conspicuous patch – and in each case a fresh-looking exit hole was at hand. Two were found within a minute of my arrival, and not in full sun; after the third no others appeared, even though I kept a sharp look-out for a further two hours. It is a little difficult to account for such a marked difference in the beetles' activity on the two successive days.

To see whether further specimens would emerge I brought home some pieces of thick bark showing a number of exit holes and secured them in a clear polythene bag. Rather to my surprise, a good series of the *Agrilus* emerged in a fairly steady 'trickle' until 28th July; as with the free-caught examples, the sexes were in similar numbers. The bred individuals were sluggish and were never seen to attempt to fly, thus conforming to the behaviour of those encountered in the field on 4th July. About mid-June, my friend Prof. J. A. Owen had similarly bred out a few from a piece of bark off the trunk of a large healthy oak in Windsor Great Park heavily infested on one side by *A. pannonicus,* with scores of exit holes. I had visited this tree with him on 27th June, but the weather turned out to be not in our favour, and not a single example could be found but a few subsequently emerged from pieces of bark brought home. Prof. Owen had earlier discovered traces of the beetle's recent presence on portions of other oaks or oak logs in the same part of the Park – not very far from where the late Mr. G. Shephard had taken the first Windsor specimen in 1972 (Allen, 1973) – and since then more widely and numerously. For the first record from the Forest, as opposed to the Great Park – a single individual in flight – see Godfrey, 1987.

Beating and sweeping (which we tried at Windsor) normally fail to yield this Buprestid, apart from the occasional chance individual. There are, however, exceptions, due most likely to unusually favourable weather conditions; for Mr. J. A. Parry tells me that on an evening visit to Windsor last summer he was so fortunate as to obtain it in some plenty by general sweeping in the vicinity of the aforementioned oak. No doubt some abnormally favourable combination of factors caused the insects to sit about on the herbage at a time when they would ordinarily have been in concealment.

It is worth pointing out that *all* my 1985 specimens – both captured and bred – were free from deformity of any kind, whereas at least three of those found at Hampstead by Mr. Foster were deformed. This may of course be fourtuitous, but alternatively it does seem possible that some obscure cause was operating in 1984 to increase the deformity rate. It is curious, too, that Foster's latest date for adults in the field was 14th July, whilst in captivity mine were emerging up to a fortnight later.

The average colour-difference in the sexes of *pannonicus*, though not large, is quite definite in that all the bluest examples are males, and all the decidedly green or coppery-green ones females. (In *A. viridis* L. it is far more striking – cf. Allen, 1951). There is some overlap in the middle of the colour range. As in the other species, males are smaller and narrower with the body more steadily tapering than females, the larger of which attain a length of 13 mm.

Recent finds in three new localities may be briefly mentioned. Within the last decade, two examples have been met with in different years at Kingspark Wood, Plaistow, in the north of West Sussex (information from Mr. P. J. Hodge) – of interest in connection with Stephens's old record from Cuckfield, through the two places are widely distant in the county. In June 1984, one was obtained by Mr. P. M. Hammond from a large oak tree in Richmond Park by the technique known as fogging. Though the locality is eminently suited to the species it has never before been reported therefrom, and the capture is a new record for Surrey. Finally, at Ashstead Common in the same county, workings were found in large numbers in the trunks of mature and old oaks, many of them injured by fire. This interesting discovery was made in late 1986 or early 1987 by Prof. Ian Menzies, who later confirmed the beetle's identity by digging out the remains of one from a burrow.

The current upsurge in the fortunes of this fine species, for long so rare here that it seemed almost to be dying out, is very remarkable and gratifying. It prompts the question: how can an insect that is neither small nor obscure persist unseen for a century and a half in a much-frequented locality such as Hampstead Heath, without being encountered? The fact that *A. pannonicus* is fugacious and shy, only showing itself, normally, in hot weather, may be one

part of the answer; while Foster's interesting suggestion, that during its protracted periods of scarcity or apparent absence it may be able to survive at a low density in the tree canopy, may perhaps be another. Moreover the mode of life of the early stages tends to ensure that they are seldom met with. The lack of an early Windsor Forest record, in fact right up to 1972, is truly surprising since it is barely credible that the insect was not present there in earlier days. It would seem to be by the merest chance that it succeeded in altogether eluding such energetic collectors in the area as the Griesbachs, Desvignes, and (nearer our time) Donisthorpe. And there is but a single specimen known from the still more intensively worked New Forest (Allen, 1973: 14) – unless, indeed, it has just recently recurred there too, which would be far from strange. Nor would it be astonishing were the beetle found to have revived in its old Kentish stronghold, Darenth Wood; whilst it would be interesting also to know the present state of the Sherwood Forest population.

Acknowledgement

I am most grateful to Mr. A. P. Foster for his kindness in supplying full details and directions for locating the Hampstead site; and to the other friends named above for permission to publish their records.

References

Allen, A. A., 1951. Notes on colour-variation in *Agrilus viridis* L. (Col., Buprestidae). *Ent. mon. Mag.* **87**: 29-30.

Allen, A. A., 1973. *Agrilus biguttatus* F. (Col., Buprestidae) at Windsor; with some account of its history in Britain. *Ent. Rec.* **85**: 12-14.

Foster, A. P., 1987. *Agrilus pannonicus* (Piller & Mitterpacher, 1783) (Col.: Buprestidae) and other noteworthy insects recorded from Hampstead Heath in 1984. *Ent. Rec.* **99**: 153-5.

Godfrey, A. R., 1987. *Agrilus pannonicus* (Pill. & Mitt.) (Col., Buprestidae) in Windsor. *Ent mon.Mag.* **123**:40.

DOLICHARTHRIA PUNCTALIS D. & S. (LEP.: PYRALIDAE) IN PEMBROKESHIRE – on 28.viii.1987, a single specimen of this very local moth visited our m.v. light at Dale Fort Centre (SM 8205). Goater (1986) *British Pyralid Moths*, gives the distribution of this essentially coastal species as extending to Cornwall and Scilly in the west, and thus its occurrence in Pembrokeshire is not entirely unexpected. G. L. & M. A. FINCH, 14 Thorndale, Ibstock, Leicester LE6 1JT.

MOROCCO REVISITED IN 1986

By W. J. TENNENT*

My last visit to Morocco was for a ten day period at the end of June 1979 (Tennent 1980) when I found that a number of the local butterfly specialities were quite worn. When I unexpectedly found that I had four weeks off from early June 1986, I decided to visit the country again and consequently flew to Gibraltar on the 2nd of June.

Thoughts of hiring a car in Gibraltar (or Spain for that matter) for use in Morocco were quickly revised when it was found that none of the local car hire firms would entertain the idea; the reason given was that instances of attacks on and thefts from tourists in Morocco had risen alarmingly in recent years. Eventually, on the 4th of June, I arrived in Tangier and, after initial disappointment that I was not allowed to take my locally hired car across the border into Algeria, set off for the Atlas Mountains. There followed a month of glorious weather in the most attractive mountain scenery; collecting was good and I took a number of species which were new to me. One fact that soon became apparent was that a high proportion of butterfly species, not only of the endemic species and subspecies but also some of the more widespread insects, are remarkably local in their distribution. A species might be quite common on a patch of hillside but entirely absent from an apparently ideal and identical habitat right next door. This was particularly so in the High Atlas where species like *Pseudochazara atlantis* and *Coenonympha vaucheri* would be easy to miss unless one stumbled upon their particular localities.

From Tangier I headed in the general direction of Ifrane in the Middle Atlas mountains. Stopping for an hour or so on a flowery slope on the outskirts of Tangier, I found *Maniola jurtina hispulla* fresh and common, a few *Pyronia cecilia* with it's small males and large females, and several *Thymelicus acteon oranus.* The next stop was a cool river valley near Chechaouen where *Nordmannia esculi mauretanica* was common on low shrubs on a hill above the river bank. Singles of *Coenonympha arcanioides, Polyommatus icarus* and *Colotis evagore* were added and a few *Celastrina argiolus* further along the road completed the day's catch.

The following day I was up and about at 0615 hrs., to find a clear blue sky and *M. jurtina* flying already. I took a slow drive to Lake Aaoua, about 12 km short of Ifrane, stopping frequently en route but added only *Aporia crataegi* and *Lycaena phlaeas*; a second *C. arcanioides* at 1500 metres in light woodland between Imouzzer and Ifrane was the only butterfly of note. The following morning

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was cool and overcast but this turned out to be quite useful as *Melanargia galathea lucasi* which was common at Ifrane could be easily examined on the knapweed heads. This was a very noticeably local species in this area, abundant in some areas and absent from others. The sky cleared later in the morning, *Lysandra punctifera* was fairly common although many were chipped. The beautiful red *Eurodryas aurinia beckeri* was to be found in small numbers together with one or two *Melitaea didyma occidentalis* and a single fresh *Eurodryas desfontainii.* The skipper *Thymelicus lineola semicolon* was common. *Colias crocea, Pontia daplidice, A. crataegi, P. icarus, Aricia agestis crameri* and *Pararge aegeria,* two battered *Iphiclides podalirius feisthamelii,* a fresh male *Pandoriana pandora seitzii,* a single *Anthocaris belia belia* in good condition and one *Spialia sertorius ali* completed the day's catch.

The following morning I rose at dawn and moved to an open rocky area on the outskirts of a deciduous wood. Breakfast was the local, rather heavy flat bread smothered in honey and I ate it sitting on a rock waiting for the butterflies to start flying. I was startled to find, whilst making my second cup of tea, that I was sharing my rock with a pale scorpion, *Buthus occitanus.* Thankfully he was fairly lethargic and had no great interest in exerting himself sufficiently to investigate the identity of his uninvited and probably unwelcome guest. Here at 1600 metres *L. punctifera* was in fair numbers and fresh. *P. pandora* was freshly emerged and quite common on the thistles whilst *Artogeia rapae, Cynthia cardui* and *C. crocea* were very common. As well as several female form *helice* of the last species there were a small number of females with the yellow markings in the black submarginal band much reduced and in some cases almost absent. *Vanessa atalanta* and *Polygonia c-album* were present in small numbers in a flowery area at the edge of the wood whilst *Hipparchia algirica* was common. Both sexes of *Gonepteryx cleopatra* were fresh as was *Lasiommata megera. M. jurtina* was common and unusually active; in contrast *M. galathea lucasi* was notable by it's absence. The occasional *P. aegeria* and two fresh *Coenonympha pamphilus f. lyllus* completed the butterflies seen in this spot and in addition there were large numbers of the Humming Bird Hawk Moth *Macroglossum stellatarum;* a large *Sphingiid* turned out on capture to be *Celerio euphorbiae.* A little further afield I saw a single battered, obviously hibernated, *Nymphalis polychloros erythromelas*, a few *Aricia artaxerxes montensis* and *Pieris brassicae.* Interestingly, there were several *Cyaniris semiargus maroccana* which, according to Higgins & Hargreaves (1983: p.84), is found 'only in the High Atlas . . . flies at 2600 metres in open places. . . ' Higgins & Riley however (1983: p.80) record *semiargus* as being 'very local in the High Atlas and Middle Atlas,

flying at 2100 – 2400 metres'. This was certainly well below the recorded altitude.

On the 8th of June I set off early in search of *Coenonympha vaucheri annoceuri*, but despite looking on a number of 'barren mountain sides above 1500 metres' the search was, as in 1979, fruitless. However, it was a beautiful sunny day and a pleasure to be in the mountains which were surprisingly green in sheltered spots. *H. algirica* and *L. phlaeas* were about in small numbers and on the top of the first 'hill' near Annoceur there were a few *Melanargia ines* and four or five damaged male *Papilio machaon* careering around the summit. On the top of one pass at ca. 1800 metres I saw what I realised after a while was part of a *Pierid* migration, consisting mainly of *A. rapae* and *C. crocea* with a few *G. cleopatra.* There was quite a strong wind blowing in a north easterly direction over the pass and there was a thin but steady stream of butterflies, flying with the wind between 2 and 7 metres above the ground. The occasional *G. cleopatra* struggled in a different direction but even when the wind dropped or shifted for a while, the general north easterly movement continued. Numbers were difficult to estimate as the density fluctuated considerably and covered a large front.

I pressed on to the area around Oukaimeden in the High Atlas south of Marrakech and arrived in a light drizzle on the 10th of June. During brief dry spells around 2200 metres I found a few *M. galathea lucasi,* one or two *Thymelicus flavus syriacus* and a single male *Thymelicus hamza.* I stayed in this general area until the evening of the 16th of June and again from the 20th to the 22nd June inclusive. It was a very productive area although many species were extremely local.

Glaucopsyche melanops algirica was not uncommon around 2200 metres and was still found in much smaller numbers at 2600 metres. More interesting was *Cupido lorquinii*, mentioned by Higgins & Riley (1983: p 62) and by Higgins & Hargreaves (1983: p 70) as being found up to 1500 metres, presumably therefore from the Middle Atlas. It is hard to believe that this species is not known from the High Atlas as it was not uncommon between ca. 2500 and 2700 metres and is not easily overlooked. The butterfly seems to prefer damp ground, most individuals being found near a roadside drainage ditch, on the bank of a small stream and at the edge of a patch of marshy ground high on a mountainside.

Berberia abdelkader was quite common but difficult to approach and impossible to pursue in it's chosen habitat on steep rock strewn grassy slopes. Males outnumbered females by approximately 10-15 : 1 and the latter sex was very difficult to find in good condition. Both sexes became chipped quickly; they rest frequently for short periods on the bare slopes and on only two occasions did I see individuals feeding. In each case females were

feeding on the lilac coloured flowers of a small ground hugging shrub.

I particularly wanted to find and photograph *Plebicula atlantica*, a species which I found in small numbers around Oukaimeden on my previous visit. It proved to be an elusive creature and although I eventually found a small number of males, I only saw two females. It does not seem to be found in any particular local area but is widespread, turning up singly almost anywhere. I met three Italian collectors who had been scouring the area for a week but had only seen one male. Both sexes are distinctive, even in flight and the butterfly can probably be accurately described as rare; I was lucky to take a series of photographs of both sexes.

I came across a thriving but local colony of *C. semiargus maroccana* with individuals just emerging at 2600 metres. It was odd that they seemed to be almost contained by a three strand barbed wire fence enclosure, clearly impossible but abundant just inside the perimeter and found only singly outside! The attractive fritillaries *Melitaea aetherie algirica* and *Melitaea cinxia atlantis* were quite common, together with a host of butterflies seen elsewhere. The mountains south of Marrakech were very colourful and this time of year was certainly the best from a floral point of view; masses of 'bog buttercups' lined the streams and *Agrodiaetus amanda abdelaziz* soon became common on a large area of purple *Vicia* vetch. The Striped Hawk *Hyles lineata* was flying commonly around 2600 metres and there were a number of *P. c-album* and *P. aegeria*, the latter many miles from the nearest tree, never mind a wood. The 'whites' were in plague proportions, mainly *A. rapae* with a few *P. brassicae* and on looking more closely, a few *Artogeia napi segonzaci*.

Among the hordes of 'whites' I spotted a marbled yellow underside which I realised must be *Zegris eupheme*. It was some time before I saw another and netted it but later saw quite a number and became quite adept at picking them out. They seem to fly rather more purposefully that the other *Pierids* and visited flowers often, lingering longer. Oddly, the species was confined to two small areas.

A search for *Heodes alciphron heracleanus* in the same locality where I had found it in 1979 again produced a few specimens. It was extremely local and this was the only place I saw females, although I subsequently found males quite commonly on a peak at 2800 metres. The females favoured feeding on low plants into which they seemed to burrow; probably half the specimens I saw had large pieces torn from the wings and this may be due to a combination of their habits and the presence of a large number of small lizards in the area.

Having seen no sign of *C. vaucheri vaucheri* I set off one morning at 0530 hrs intending to reach several of the peaks above

Oukaimeden. The ubiquitous *C. cardui, A. rapae* and *P. daplidice* were common on the lower slopes whilst a small form of *Euchloe simplonia* flew commonly higher up. About 2700 metres my atention was drawn to a small brown butterfly fluttering weakly among the rocks and this turned out to be a very fresh *C. vaucheri* with it's beautifully marked underside. There were no more until I reached the summit where both sexes were quite common, flying with several male *H. alciphron heracleanus* and masses of *E. simplonia.* Walking along a ridge, it was apparent that although there were plenty of butterflies on each summit, there were very few insects flying in between. A few *L. megera* were found and on one peak I took a single *Elphinstonia charlonia.* On two occasions fresh looking *N. polychloros erythromelas* were seen on a peak but glided away down the mountain side when approached.

Another remarkably local species was *Pseudochazara atlantis* which was found on a steep rocky slope at 2700 metres in an area no more than 150 metres from top to bottom and about 30 metres wide; despite looking on apparently identical adjacent slopes there was no sign of it outside it's chosen area.

A patch of wet mud near one of the streams attracted males of many species, usually *C. semiargus, A. amanda, T. flavus* and *A. napi* although *M. aetherie* and *C. lorquinii* were seen occasionally. Once a male *P. atlantica* appeared and on another occasion, a female *A. amanda* joined the males. It was notable that although groups of *A. napi* were always to be found in this spot, I only once saw a group of three *A. rapae* even though that species was by far the commoner of the two in the surrounding area.

On the 18th of June I sit off for a three day journey through Ouirgane, Ijoukak and over the Tizi-n-Test before turning east towards Ouarzazote. On much of the route *Colotis evagore nouna* was common on the roadside. A male *Tarucus theophrastus* turned up at one spot and at another where there was a lot of heather there were several very small *P. daplidice* and a good number of *Philotes abencerragus.* At one point at 1600 metres on the way up the Tizi-n-Test there were swarms of worn *N. esculi mauretanica* struggling around some thorn bushes in the high wind. The first night stop at 2000 metres produced quite a large number of male *Hyponephele maroccana maroccana*, a few *C. vaucheri* and what I thought initially was a small *B. abdelkader* but which turned out on capture to be a rather early *Satyrus ferula atlanteus. Hyponephele lupina mauretanica* was present in small numbers, flying with *H. maroccana;* males of the latter species are very variable, some with a very slight orange forewing flush and one subapical ocelli, others with a broad flush and two ocelli. The country towards Ouarzazote became semi-desert with little to recommend it. It was oppressively hot, a condition which was not alleviated by a constant hot wind; the only

butterflies of interest were *T. theophrastus* and a single *Pseudophilotes bavius fatma* atop a small hill.

On the 23rd of June I returned to the area around Ifrane. The thistles had all gone to seed and *P. pandora* had gone with them. *M. jurtina* and *H. algirica* were to be found in large numbers whilst *M. galathea* was now mainly tattered and *L. punctifera* was represented by only a handful of battered individuals of both sexes. The primary reason for my return was to see *Mesocidalia aglaja lyauteyi* which I had taken in 1979 and sure enough it was there in the same place, visiting knapweed flowers. Most were in excellent condition but one or two were already showing signs of wear. *G. cleopatra* was common and was now joined by the large *Gonepteryx rhamni meridionalis.* In the hills above Azrou there were numbers of fresh *N. polychloros erythromelas*, sailing among the bushes, easier to see than to catch as I never saw one rest and the steep stony ground precluded a chase. On an open plateau at 1640 metres there was a large stand of *Euphorbia* and the puzzle of where *P. pandora* had gone was solved! There was nothing else flying on the plateau other than dozens of *P. pandora*, the occasional *G. cleopatra* and a single *G. rhamni*. I idly netted a *cleopatra* and found it was quite an extreme aberration – a sexual mosaic with both forewings completely male, the right hindwing 50/50 male/female and the left hindwing almost completely female with one or two streaks of male colouration.

The 24th of June was my last day at Ifrane and the last species to be added to the list was a fresh pair of *Hipparchia alcyone caroli*. It was with some difficulty that I dragged myself away from the Atlas Mountains. It is a beautiful area, unspoiled as yet by hordes of tourists, inhabited by polite, friendly and helpful local people. I can't wait to go back!

Acknowledgement

My thanks to David Garthwaite of Luton, Beds for identifying the scorpion, *Buthus occitanus* from a colour slide.

References

Higgins, L. G. and Hargreaves, B. 1983. *The Butterflies of Britain and Europe.* Collins, London.

Higgins, L. G. and Riley, N. D. 1983. *A Field Guide to the Butterflies of Britain and Europe* (5th Edition). Collins, London.

Tennent, W. J. 1980. Gibraltar and Morocco, 1979. *Entomologist's Rec. J. Var.* **92**: 206-210.

Tennent, W. J. (1987) A note on the apparent lowering of moral standards in the Lepidoptera. *Entomologist's Rec. J. var.* **99**: 81-82.

Tennent, W. J. Some observations on the brown and blue colour forms of female *Lysandra punctifera* Oberthur and *Agrodiaetus amanda abdelaziz* Blachier (*Lep.: Lycaenidea*) in North Africa. *Ent. Gaz.* **39** (in press).

F. W. FROWHAWK'S NATURAL HISTORY OF BRITISH BUTTERFLIES : NOTES ON THE DATE OF PUBLICATION – A note in this journal (*Ent. Rec.* **99**: 214), by Mr. Gardiner attempted to correct the date of publication given in the bibliography accompanying Colin Pratt's article on the comma butterfly. Though I think both of these correspondents were refering to F. W. Frohawk's two volume work that appeared in 1924, for the record it seems necessary to point out that his *Natural History of British Butterflies* was in fact 'published' in 1915 in abridged form.

Quite what laws define publication date, I know not, but it is clear that the material that was published in *'THE FIELD, the Country Gentleman's Newspaper'* volume 125, consisting of an introductory article and thirty-four weekly parts, was material intended for a book, publication of which was delayed by nine years, initially due to 'hostilities'. Frohawk, in the introduction to his *The Complete Book of British Butterflies* published on December 14th 1934, described publication of his previous work as 1924, and failed to mention the earlier use of the title.

Never the less, there appeared in print in 1915, material under a title that only varies from the 1924 publication, by the lack of the definite article prefix. An article advertising this serialisation, was published in the December 26th 1914 issue of the *'The Field'* but this does not appear to be from the hand of Frohawk, so Colin Pratt's reference to 1914 would seem to be incorrect. Brian Gardiner's categorical statement of publication in 1924 without mention of the 1915 material, might well have led to just the errors that he set out to correct. D.E. WILSON, Joyce House, Green Tye, Much Hadham, Hertfordshire SG10 6JJ.

NEW EUPITHECIA RECORDS (LEP.: GEOMETRIDAE) FOR CARDIGANSHIRE FROM ROTHAMSTED INSECT SURVEY LIGHT TRAPS – Although some of the following species have been recorded for what is now the larger administrative county of Dyfed they appear to be new records for the smaller pre-1974 county of Cardiganshire. As many entomologists still refer to the older county boundaries and those of the Watsonian Vice-counties (which are the same in the case of Cardiganshire) I thought the captures should be recorded formally:

Eupithecia haworthiata Doubl.: One on 4.viii.1985 at Tregaron; *Eupithecia valerianata* Hb.: One on 15.vii.1986 at Tregaron (Genitalia examined); *Eupithecia expallidata* Doubl.: Two during

August 1984 and 5 during July and August 1986 at Aberystwyth; one on 3.viii.1984 at Aberporth (Genitalia examined); *Eupithecia assimilata* Doubl.: One on 12.vii.1985 and one on 13.vi.1986 at Tregaron; one on 14.vi. and one on 17.vi.1986 at Aberystwyth; *Eupithecia virgaureata* Doubl.: Two well-defined broods with many individuals caught during May and Aug./Sep. at Tregaron 1984, 1985 and 1986, Aberystwyth 1984 and Aberporth 1984 and 1985. (Genitalia examined); *Eupithecia pusillata* D. & S.: One on 1.vii. 1986 at Aberporth. (Genitalia examined); *Eupithecia tantillaria* Boisd.: Several during June 1984 and 1986 at Aberporth; one on 4.vi.1984 and one on 15.vi.1986 at Aberystwyth.

Thanks are extended to Mr. G. Williams and Commdr. E. Verge, Mr. M. Leggett and Mr. I. J. L. Tillotson who operate the traps at Aberporth (Site No. 440, O.S. Grid ref. SN 235 522), Aberystwyth (Site No. 340, O. S. Grid Ref. SN 629 837) and Tregaron (Site No. 331, O. S. Grid ref. SN 687, 618) respectively. Special thanks are due to Mr. Tillotson who identified all but the most difficult specimens from the three traps and for forwarding the pugs. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

CIMBERIS ATTELABOIDES FAB. (COL.: NEMONYCHIDAE) IN WEST CUMBRIA – On 28th April, 1987 I swept one specimen of this species from long grass near to some Larch trees in the Forestry Commission plantation at Longbarrow, Dent Fell, (NGR NY03, 12), Cumbria. In spite of further searching and sweeping in the immediate area this was the only individual seen. *C. attelaboides* has previously been recorded from Cumbria, but I have been unable to find any published records of it from the West Cumbria region. F. H. Day recorded the weevil from several localities around the Carlisle area and specimens in Day's collection in the Tullie House Museum at Carlisle are from Newton Moss, (NY43), Cumwhitton Moss, (NY43), Durdar, (NY44), Orton, (NY35) and Talkin Tarn, (NY55).

Cimberis attelaboides is regarded as being scarce in Britain, but it appears to be widely distributed, especially in Scotland. The adults and larvae are associated with *Pinus sylvestris*, but the species is also known to attack *Pinus pinaster* on the continent. the larvae feed on the pollen in the male flowers of *P. sylvestris* and pupation takes place in the soil.

I wish to thank Mr. David Clarke, curator of the Tullie House Museum, Carlisle for kindly allowing me to examine specimens in the F. H. Day collection, and Dr. Paul Hyman (Nature Conservancy Council) for information regarding the distribution and status of *C. attelaboides* in the British Isles. – R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA28 8RF.

FOUR ANTS (HYM.: FORMICIDAE) NEW TO THE BELGIAN FAUNA

By R. CAMMAERTS and M. C. CAMMAERTS*

We report here the discovery of three ant species and a form of a common species, new to the Belgian fauna. These records should be of interest to British research workers since the species to which they belong live within or just outside the British Isles.

1. *Myrmica rubra* (Linnaeus, 1758) – microgyne form: In May 1983, we found in a garden at Ellezelles (Hainaut) three colonies of *M. rubra* containing microgynes. These were in a heap of rotting hay added to twice a year. Similar colonies were found again in this garden in 1984 and 1985 both in the rotting hay and under stones. During these three years the ratio of microgynes to normal queens increased from 8.8% to 42.9%, then 76.7%.

On a previous occasion, but not in subsequent years, we also obtained a few microgynes and abnormal workers in one nest out of 50 collected from meadows at Merchtem (Brabant) in 1976.

This microgyne form has been reported sporadically from Britain and Europe by several authors from Forel (1874) onwards and has been studied in Dorset, England, where it occurs regularly, by Elmes (1973) and by Pearson (1981). It seems to us to be a mutative form which could be in process of evolving into a distinct parasite species, a hypothesis proposed and discussed by Cammaerts et al. 1987.

2. *Myrmica specioides* Bondroit, 1918 (= *puerilis* Staerke, 1942) : Although this species has been recorded from sandy areas in the Netherlands and South-east England, it was not found in Belgium until, after fruitless searches in Kempen and on old acid dunes on the North Sea coast, we discovered two nests on recent calcareous sand dunes on the coast at Koksijde in 1983. (There is an unpublished record of this species taken by J. C. Felton at Westende sand dunes, Belgium 13.viii.1965).

3. *Tetramorium impurum* (Foerster, 1850) : This species, common in open -field and non-sandy soils in Belgium, was for long confused with and identified as the very similar *T. caespitum* (L.). It has been reported from Belgium so far only in recent non-faunistic papers and by Cammaerts *et al.*, 1985. This last paper gives information on the identification and the distribution of the two previously confused species.

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4. *Lasius emarginatus* (Olivier, 1791) : This was formerly recorded from four localities in Mid-Belgium by Lameere (1892) and cited as "assez frequent" by Bondroit (1909). Subsequently Bondroit (1918) retracted these records and wrote "Je ne l'ai jamais vue en Belgique" and no specimens have been found in collections.

We found a colony of this easily recognised species at Fontenoille in the southern part of Belgium- Lorraine 2.ix.1983 but at only one site out of 37 searched.

This species was recorded by Wasmann (1909), in neighbouring and climatically similar Luxembourg. The northern boundary of *L. emarginatus* as at present known runs from the Channel Islands, Normandy, Lorraine, Alsace, South Germany and South Poland (Bernard, 1968).

References

Bernard F. 1968. *Les fourmis d'Europe occidentale et septentrionale.* Masson et Cie, Paris, 411 pp.

Bondroit J. 1909. Les fourmis de Belgique. *Ann. Soc. ent. Belge,* **LIII**: 479-500.

Bondroit J. 1918. Les fourmis de France et de Belgique. *Ann. Soc. ent. France* **87**: 1-174.

Cammaerts M-C, Cammaerts R., Bruge H. (1987) Some physiological information on the microgyne form of *Myrmica rubra* L. *Annls. Soc. Zool. Belg.* **117**: 147-158.

Cammaerts R., Pasteels J-M., Roisin Y. 1985. Identification et distribution de *Tetramorium caespitum* (L.) et *T. impurum* (Foerster) en Belgique. *Actes Coll. Insectes Sociaux,* **2**:109-118.

Elmes G. W. 1973. Miniature Queens of the Ant *Myrmica rubra* L. (Hymenoptera, Formicidae). *Entomologist* **106**: 133-136.

Forel A. 1874. *Les Fourmis de la Suisse.* Neue Denkschr. allg. schweiz. Ges.Naturw. Zurich.

Lameere A. 1892. Note sur les Fourmis de la Belgique. *Ann.Soc. ent.Belg.* **xxxvi** : 1-9.

Pearson B. 1981. The electrophoretic determination of *Myrmica rubra* microgynes as a social parasite: possible significance in the evolution of ant social parasites. in *Biosystematics of Social Insects,* Academic Press, London and New York.

Wasmann E. 1909. Zur Kenntniss der Ameisen und Ameisengasten von Luxemburg, III *Arch.trim.Inst. Gr-Duc.sect.sc.*: 1-115.

BISTON BETULARIA L. (LEP.: GEOMETRIDAE): MELANISM IN DECLINE?

By B. K. WEST, B.Ed.*

B. betularia has taken a considerable share of the research into industrial melanism in Britain, and three chapters are devoted to this species by B. Kettlewell (*The Evolution of Melanism*, 1973), these relating in part to the genetics and geographical distribution of the three main forms of the insect -- f. *typica, carbonaria* Jdn. and *insularia* Th.-Mieg, which he describes as a complex of genetically distinct morphs intermediate in appearance between f. *typica* and *carbonaria*, and for his own research categorized as *insularia*^{1} to *insularia*^{5} in order of increasing speckling. Unfortunately, in appearance, f. *typica* and *insularia* grade into each other so that often identification is purely subjective, thus rendering statistics concerning them suspect, especially when more than one observer is involved.

Kettlewell summarizes the melanistic trends in *betularia* for the period 1952-1970 as follows, '... f. *insularia* is increasing in a few somewhat specialized areas, and f. *carbonaria* only in peripheral districts of recent urbanization . . . ' Further, he states that, somewhat surprisingly, smokeless zones are having an effect and that *betularia* is for the first time in a hundred years reversing its trend to melanism, even though no vegetative lichens have reappeared. He suggests that the reverse trend will occur in the opposite order to its development, i.e. *carbonaria* → *insularia*^{5} → → *insularia*^{1} → f. *typica*. In view of this I am surprised to have noticed only very occasional reference to *betularia* in relation to melanism during the past ten years or so, particularly considering the continued amelioration of the environment from decreasing atmospheric pollution in many parts of Britain.

For many decades N. W. Kent suffered heavy atmospheric pollution by virtue of its close proximity to London, and its relative position in regard to the prevailing winds, with the industries, particularly cement, of lower Thames-side, providing additional pollution when the wind was easterly. The region is now a Clean Air Zone as defined by the 1964 Clean Air Act, but even at that time the dust deposits, excluding cement, were well below the national average. Subsequently further progress has been made with the decline of heavy industry, change from coal to oil as industrial fuel, the elimination of cement pollution, and the use of electricity as the source of power in the new light industry development.

I have kept records of the frequency of the various forms of

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betularia to visit my m.v. light at Dartford since 1969. Unfortunately there are no figures for the area prior to this, although there are for Bromley and Orpington five miles to the south-east. Kettlewell quotes figures for the incidence of *carbonaria* in various localities in the Home Counties prior to 1970 as high as 80% to 90%, and I suspect that this was the case here for specimens of *betularia* encountered at rest or bred from feral larvae were invariably melanic; typical *betularia* appeared to be rare.

I have noted above the suggested order in which melanism would show decline in this species, but if one refers to plate 7.1 in Kettlewell's *Evolution of Melanism* one finds that *carbonaria* in the late nineteenth century are quite unlike those of to-day, particularly in possessing a white postmedian line on the forewing. On 12.vii.1977 one of this form visited my garden m.v. light, a form I had never seen before, except for those in the National Collection. Subsequently several others have arrived, although I have not come across the form elsewhere.

For the period 1970-1985 the figures for the forms of *betularia* seen at my m.v. light at Dartford are as follows:—

	% typica	% insularia	% carbonaria	Yearly sample
1970-1973	14.5	7.5	78	119
1974-1977	10.5	13	76.5	107
1978-1981	17	11	72	99
1982-1985	19	16.5	64.5	102

In each of the years a significant number of *betularia* appeared at the light, the lowest number being 63 in 1971, and the highest 176 in 1981. The highest numbers for *carbonaria* were reached in 1981 (81%), 1974 and 1976 (80%), while the lowest for this form occurred in 1980 (60.4%) and 1985 (57.9%), the latter year giving also the highest percentages for both the other forms.

Although the figures on a four year basis indicate a steady decline in the incidence of *carbonaria*, the individual yearly figures show irregularities, no doubt in part due to the size of the samples. Some increase in both *typica* and *insularia* is indicated, but in view of the subjective nature of differentiating these, in a number of instances, perhaps one should not draw conclusions.

Melanism may be in decline so far as *betularia* is concerned, but this connot be said of all species. The melanic forms of *Dasychira pudibunda* L. seem to be commoner now, although the first record for Kent was as late as 1948, compared with 1901 for *carbonaria* (Chalmers-Hunt: *Butterflies and Moths of Kent* **3**); this source quotes ab. *nigra* Prout of *Gonodontis bidentata* Clerck

being taken in Kent for the first time as late as 1959, and I first saw it at Dartford in 1973, since when it has become less rare. Like *carbonaria*, these melanic forms are also dominant genetically.

The decline in the relative frequency of *carbonaria* at Dartford indicated by the figures over three year periods does represent a decline of almost 1% per year; it will be interesting to see what the future trend will be, including the rapidity of any changes which may occur. This also applies to species in which melanism has appeared in this area only recently, but appears to be increasing. Finally worth mentioning is one common species which at Dartford appears to produce melanic forms to the extent of 100%, this is *Chloroclystis rectangulata* L., although in the 1930s of the many specimens I used to see at rest on the apple and pear tree trunks and adjacent structures in my garden included many of the green typical form; melanic forms of this species were encountered in N. W. Kent as early as the late nineteenth century.

References

Chalmers-Hunt, J. M., 1968-81, *Butterflies and moths of Kent* 3 Arbroath.

Ford, E., 1955, *Moths.*

Kettlewell, B., 1973, *The Evolution of Melanism.*

Thames-side Joint Committee for the Abatement of Atmospheric Pollution, *Reports* 1968-73.

SANGUISORBA OFFICINALIS LINNAEUS.: A FOODPLANT OF BISTON BETULARIA (L.) (LEPIDOPTERA: GEOMETRIDAE) – On 22nd September 1987 I observed one caterpillar of *Biston betularia,* peppered moth, on a plant of *Sanguisorba officinalis* Linn., great burnet, in Honey Slough west field, Fryent Country Park, Middlesex (v.c.21). The caterpillar measured 64 mm in length and of particular note was the camouflage which mimicked the black and whitish discolourations that often occur on great burnet stems at this time of the year. The caterpillar was again observed in different positions or on different stems of the same plant on the 23rd 25th, 26th and 27th September, but was no longer present when the plant was next checked on 4th October. It was evident that leaves were eaten between each observation and in a systematic fashion, with all the leaves on a stem being eaten before the caterpillar moved onto a new stem.

Scorer, A. G. 1913, in his *Entomologist's Log-book* (Routledge) lists *Betula, Cytisus scoparius, Fagus, Prunus, Quercus, Rosa, Rubus fruticosus, Salix, Tilia* and *Ulmus* as larval foodplants of this moth. Allan, P. B. M., 1949, *Larval Foodplants* states that *Bison betularia*

has been found on almost every species of native deciduous tree and shrub. *Sanguisorba officinalis* is a perennial herb and does not appear to have been previously recorded as a foodplant of *Biston betularia.*

I am grateful to C. W. Plant at the Passmore Edwards Museum for checking the identificiation of the caterpillar and for drawing attention to the possible significiance of this record – L. R. WILLIAMS, Brent Leisure Services, Brent House, Wembley High Road, Middlesex HA9 6SX.

A FURTHER NOTE ON THE BRITISH SPECIES OF DACNE (COL.: EROTYLIDAE) – Mr. D. A. Prance's note on the relative incidence of our two species of this genus in Wales (*antea:* **99** 185) gives me occasion to remark that, in my experience, the difference he draws attention to is equally pronounced in south-east England and probably therefore over their entire British range; and further, that over a long period there would seem to have been a definite reversal. To get the complete picture one has to go back to last century, in which Fowler (1889, *Col. Brit.Isl.* **3**: 183) notes *D. rufifrons* as locally common, and *D. humeralis* (i.e. *bipustulata*) as rare, giving for each a similar distribution. Thus on first finding a *Dacne* (*D. bipustulata* freely at Chilham, E. Kent, 1931), having then only Fowler's work to consult, I concluded I had got a rarity. All later experience, however, pointed to this last as much the commoner of the two species. I do not remember ever finding more than a few *rufifrons* at a time, whereas *bipustulata* is often abundant and seldom occurs singly. I have long looked upon *rufifrons* as uncommon, or even scarce. Of course, if Fowler inadvertently transposed his data for the two species, the apparent reversal of their frequency over time would be illusory. – A. A. ALLEN, 49 Montcalm Road, London, SE7.

UNUSUAL FLIGHT TIMES FOR ALSOPHILA AESCULARIA D. & S. (THE MARCH MOTH (LEP.: GEOMETRIDAE)) – A single male of this species was caught in the Rothamsted Insect Survey Light trap at Warehorne, in Kent (Site No. 478. O. S. Grid ref. TQ 988 346) on the night of 13/14.ix.1987. The species usually flies in March and April, varying slightly according to the season.

On searching our extensive database we found only three other occasions when *aescularia* had been recorded well outside its normal flight period: A single male was caught at Tarleton, Lancashire (Site No. 371, O.S. Grid ref. SD446 224) on 20/21.vii. 1980 and two males were caught at Fort Augustus, Inverness-shire (Site No. 49, O.S. Grid ref. NH 366 092) on 2.xi.1975. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts, AL5 2JQ.

SERICOMYIA SILENTIS (HARRIS) (DIPTERA: SYRPHIDAE): THE 44, 834th. HOVERFLY

By JENNIFER OWEN, Ph.D.*

I have been operating a Malaise trap from 1 April to 31 October since 1972 in my suburban garden in Leicester and identifying and tabulating all hoverflies captured. This year, the sixteenth of the study, looked like being a poor year for hoverflies, the cumulative 1987 total for the week ending 9 August being the second lowest yet for comparable dates. (Records are kept on a weekly basis, the end of a week being taken as Sunday.)

However, hoverfly numbers in the garden increased dramatically on Friday 14 August, and so on 15 and 16 August the Malaise trap catch was scored hourly. Between 1100 and 1200 hours on 15 August, a male *Sericomyia silentis* entered the trap. My previous encounters with this impressive hoverfly had been amongst samples collected on Shetland and South Uist, and it was a totally unexpected capture in a suburban garden in the Midlands. Although there are three previous Leicestershire records (Owen 1979), Stubbs and Falk (1983), while acknowledging that it is widespread, state that 'boggy heaths, acid wet meadows or woodland clearings. . . . provide typical habitat'.

Up to 1100 hours on 15 August 1987, an overall total of 44,806 hoverflies of 90 species had been captured by the Malaise trap. In the hour 1100 to 1200, 56 were caught, among them the specimen of *S. silentis*. It is possible, therefore, to place this capture at between the 44,807th. and the 44,862nd., and I have simply assumed it came mid-way. I can reasonably conclude that *S. silentis* is rare at this site, although, of course, I shall have to wait for the second capture to know just how rare.

Malaise trapping confirmed the impression of an increase in hoverfly numbers in the garden during the second week of August, the cumulative total for the week ending 16 August (1152) being nearly three times that for the week ending 9 August (466). Only in 1977 did the cumulative total more than double over the comparable week. 1977 was a year of massive influx of *Episyrphus balteatus* to the garden (Owen 1981), and in the current year, too, the increase in numbers was in large part caused by numbers of *E. balteatus*, 429 having been caught in the week 9-16 August. The unprecedented numbers (1143) of *E. balteatus* in 1977 were mostly captured in the week ending 14 August and in the three following weeks.

In this year too, numbers of *E. balteatus* trapped remained high relative to other species, 227 having been caught in the week ending

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23 August and 119 in the week ending 30 August. Thereafter, numbers of all species declined. By the week ending 18 October, the 1987 cumulative total was 2867, including 831 *E. balteatus*, making it the eighth best year for hoverflies, only average, but by no means the disastrous year that it appeared to be up to the beginning of August.

Reference

Owen, J. 1979. Hoverflies (Diptera: Syrphidae) of Leicestershire: an annotated checklist. *Trans. Leicester Lit. and Phil. Soc.* **73**: 13-31.

Owen, J. 1981. Trophic variety and abundance of hoverflies (Diptera, Syrphidae) in an English suburban garden. *Holarctic Ecology* **4**: 221-228.

Stubbs, A. and S. Falk 1983. *British hoverflies: an illustrated identification guide.* British Entomological & Natural History Society.

Notes and Observations

HYPENA OBSITALIS HBN. (LEP.: NOCTUIDAE), THE BLOXWORTH SNOUT, IN CORNWALL – On the morning of 8th November 1987 I disturbed a small moth that was resting near my back door. Its flight was slow and "plume-like", and the patterned wings and noticable palps clearly suggested an unusual snout. On capture it proved to be a male *obsitalis,* probably around the tenth British specimen outside of the Channel Islands, where it is resident. Running an m.v. light subsequently drew a blank.

Readers may speculate on the suspense involved on seeing a rare moth, and knowing that one's net is in the boot of the car (locked), parked in the garage (also locked) ! F. H. SMITH, Turnstones, Perrancoombe, Perranporth, Cornwall.

THE EFFECT OF STORM DAMAGE ON CATOCALA SPECIES (LEP.: NOCTUIDAE) IN THE NEW FOREST – the effects of the great storm of 15th October on insect populations will take some time to assess. The New Forest area is famous as a locality for the *Catocala* species *sponsa* and *promissa,* insects which probably lay their overwintering eggs on the upper branches of oak trees.

I visited two principal sites on 5th November : Lady Cross has relatively little damage, with only one major oak down, although numerous branches have been torn from the trunks. The central area of Frame Heath has been devastated with several of the old "sugar" trees down and torn limbs and branches everywhere. How many *Catocala* larvae will fail to find food on hatching next year remains to be seen. E. H. WILD, 7 Abbots Close, Highcliffe, Dorset.

DYTISCUS LAPPONICUS GYLL. (COL.: DYTISCIDAE) SUNBATHING – On a family holiday near Loch Maree in Wester Ross, we chose one warm day (11.viii.1987) to go in search of *D. lapponicus* Gyllenhal among the hills to the west of Strath Lungard. As luck had it, we found the species at the first lochan we visited, at an altitude of 550m, but not in the usual way, for our first glance at the scene revealed a female (beetle, that is) quite dry, basking in the sun on a stone which protruded out of the water. Then we saw two more females similarly sunbathing a few feet away and a fourth out of the water on a stone in a nearby lochan. There were other females and some males to be seen swimming in the water and the lochan was swarming with very large tadpoles (? lacking iodine) plus a few frogs and newts. On the surface of the lochan were a number of *Gyrinus opacus* Sahlberg.

I have not been able to find any previous record of *D. lapponicus* sunbathing in this way. I am tempted to speculate that the beetles were preparing to fly though, as far as I am aware, there are no British records of *D. lapponicus* flying. Nevertheless, the species breeds in still water, often in small lochans with no obvious inflow or outflow from which one would conclude that at least some examples fly. Other members of the genus *Dytiscus* certainly fly though I have been unable to discover whether they sunbathe prior to taking off.

It would have been nice to have been able to wait and witness flight if this was what the beetles intended but it was late afternoon and there was still a 3hr walk back to the car so we left the site without an explanation. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

LIGHT TRAP OF FAIR ISLE – early in 1987 the writers conveyed an 80W m.v. to Fair Isle, midway between Orkney and Shetland, and left it in the care of the warden of the bird observatory, Mr. Nick Riddiford. Early reports are encouraging, with both the *orkneyensis* and *thulei* subspecies of *Diarsia mendica* being noted.

Visiting entomologists would be welcome (full board available) – contact the Warden, Bird Observatory, Fair Isle, Sheltand ZE2 9JU. Telephone 03512-258. P. J. SELLAR and B. M. O'BRIAN, 89 Riddlesdown Road, Purley, Surrey.

LIMNAECIA PHRAGMITELLA STAINTON (LEP.: MOMPHIDAE) IN FIFE – Since its discovery as a Scottish resident at Possil Marsh, v.c. 77, by R. P. Knill-Jones in 1982 (*Proc. Trans. Br. ent. Nat. Hist. Soc.* (1983) **16**: 103) this species has been found to occur at two other sites near Glasgow (in v.c.76) and on Arran (v.c. 100) (*Glasg. Nat.* (1984) **20**: 436; (1986) **21**: 150; *Ent. Rec.*

(1984) **96**: 253 . . . with some duplication of records!), suggesting that it may have a growing distribution in the west of Scotland. On 14.v.1987 I collected four of the more ragged of the previous year's *Typha latifolia* heads seen at Morton Lochs NNR, Fife (v.c.85), from which about 15 moths duly emerged in vii.1987, showing *L. phragmitella* to be present in eastern Scotland as well. Much *Typha* was apparently uninfested, suggesting that the moth may be a very recent arrival at that site or possibly that it is under extreme environmental pressure there. No larval parasites were reared, but in my experience *L. phragmitella* is infrequently parasitised as a larva, and then only in extremely rich wetland sites such as the Norfolk Broads, where I have reared a few of the ichnenmonid *Diadegma hygrobia* (Thomson) (det. K. Horstmann) from it, though more generalised parasites can be reared from collections of its pupae almost anywhere. I saw no evidence of excessive predation from anthocorid bugs or birds at Morton Lochs. The Scottish Insect Records Index maintained here (see *Ent. Rec.* (1987) **99**: 37-38) has been invaluable for the preparation of this note, and I am grateful to Pete Kinnear, NCC, for arranging access to Morton Lochs NNR. MARK R. SHAW, Royal Museum of Scotland, Chambers Street, Edinburgh, EH1 1JF.

ISCHNOSCIA BORREONELLA (MILLIERE) (LEP.: TINEIDAE) – In 1985 (*Moths and Butterflies of Great Britain and Ireland* **2**: 165) I wrote that *Ischnoscia borreonella* had not been seen in Britain since 1926 and I believe this was still the situation when on 15.viii.1987 I collected a female specimen at Portland, Dorset, one of the two former British localities.

Dr. John Langmaid and I were preparing to collect with mercury-vapour light in a sheltered spot on the east side of Portland, and while it was still light enough to see small moths without the aid of a torch I was lucky enough to see this minute tineid fly past at eye level. Unfortunately it was the only one we saw.

The biology of this species is completely unknown. The rocks at the scene of capture are rather bare, and perhaps the larvae feed on some sort of detritus in rock crevices. E. C. PELHAM-CLINTON, Furzeleigh House, Lyme Road, Axminster, Devon, EX13 5SW.

DORCATOMA SERRA PANZ. (COL.: ANOBIIDAE) IN WEST NORFOLK – This uncommon or very local species is already on record from East Norfolk (near Norwich, and Catfield Fen. – cf. *Ent. Rec.* **95**:248) but so far not, I think, from the western vice-county. I have lately, however, determined as *D. serra* a few specimens swept from a fair-sized oak in the boundary hedge of a country garden belonging to my friends Mr. and Mrs. A.W. Gould at Foulden,

near Swaffham. Three were taken on 10.vii.85, and one or two in earlier years similarly. *D. serra* develops in certain tree fungi, but none was apparent on the oak concerned, which looked quite sound externally. – A. A. ALLEN, 49 Montcalm Road, London, SE7.

EGG-LAYING CATOCALA PROMISSA D.&S., THE LIGHT CRIMSON UNDERWING (LEP.: NOCTUIDAE) – In view of the apparent difficulty in obtaining eggs of this species, it may be of interest to record that a female captured on 25.vii.1987 in Hampshire laid eight eggs between 2nd and 6th August.

Eggs were laid on netting covering a small, circular container (kept out of doors); tissue paper in the container and one directly on honey-impregnated tissue used to feed the moth. Materials in the container not utilised included cork bark, oak bark, leaves and damp moss used to keep the humidity high. J. PLATTS, 11 Maydowns Road, Chestfield, Whitstable, Kent.

ZYRAS HAWORTHI. STEPH. (COL.: STAPHYLINIDAE) IN DORSET – A single specimen of this rarely recorded beetle was taken from leaf litter in a Dorset Naturalists Trust reserve at Brackett's Copse, Harwood on 12.v.1987. Recent records of this species have been summarised by Appleton (1971, *Entomologist's mon. Mag.* **107**: 256), and includes a fairly recent record from Studland, Dorset. Fowler (1888, *Col. Brit. Isl.* **2**: 56) gives a 19th century record from Bloxworth by C. P. Cambridge. This capture seems to be the third recorded for Dorset, and the most westerly one. Previous records are mainly from Surrey, with Essex and the New Forest also included.

The leaf litter was collected either lying in the open or amongst ramsons (*Allium ursinum*), from a damp area near the stream which flows through the reserve. On this occasion, no ants were seen, and this brightly coloured beetle was probably on the move. P. D. ORTON, 22 Lyewater, Crewkerne, Somerset.

A SCOTTISH SPECIMEN OF COLEOPHORA ALNIFOLIAE BARASCH (LEP.: COLEOPHORIDAE) – A male specimen of this species has remained unrecognized in my collection for the last 36 years, collected at Camghouran, Rannoch, Perthshire (v.c. 88), probably with the aid of a Tilley lamp, on 23.vi.1951. Both alder and birch are abundant in this area. I made a genitalia slide from the specimen in 1951, but did not have sufficient information to identify it correctly at that time and it came to be placed amongst my *C. milvipennis* Zeller. Recently I re-examined my slides in the light of the paper by Karsholt & Nielsen (1978, *Ent. Meddr* **46**: 1-16) and Emmet's (1980, *Entomologist's Rec. J. Var.* **92**: 129-138) translation of their keys to species by genitalia. Karsholt & Nielsen's photographs have been reproduced too faintly to be able to recog-

nize the characters of the aedeagus, but having now made slides from males of all the British species of this group I find that the separation is very clear. The Rannoch specimen is a little more robust than my *milvipennis* but does not exceed the largest of them in wingspan.

Dr. Mark Shaw has kindly informed me that there is no record of *C. alnifoliae* in the Scottish Insect Record Index at the Royal Museum of Scotland. Records from England seem remarkably vague. I have not seen one stating that the genitalia had been examined, but Newton's (1979, *Entomologist's Rec. J. Var.* **91**: 234-236) records from alder in Gloucestershire are most likely to be correct. E. C. PELHAM-CLINTON, Furzeleigh House, Lyme Road, Axminster, Devon, EX13 5SW.

CATOPS FULIGINOSUS ER. (COL.: LEIODIDAE) IN KENT – Though it was not always so, this species has become very general of late years, at all events in the south-east where it is the commonest of its genus at the present time; occurring singly but quite frequently by sweeping, in refuse, etc., whilst others are more confined to special habitats such as carrion or small-mammal nests and runs, etc. It is curious, therefore, that I have seen no definite record for Kent. I have met with it hereabouts once or twice in my former garden at Blackheath, and of late at least three or four times at Shooters Hill; farther east in the county I may have overlooked or omitted to note it. *C. fuliginosus* is at first sight much like several other *Catops* species but can easily be recognized among those of medium size by the distinct sinuation of the basal pronotal margin near each angle. The aedeagus is tolerably distinctive with the parameres reaching to the subtruncate apex. – A. A. ALLEN, 49 Montcalm Road, London, SE7.

Current Literature

Pasture-woodlands in lowland Britain by **P. T. Harding** and **F. Rose.** 89pp. 8 colour illustrations. Limp. Institute of Terrestial Ecology, 1986. Price £6.10 inclusive. (Available from ITE at Merlwood Research Station, Grange over Sands, Cumbria).

In this interesting book, the origins, form and composition of pasture-woodlands are summarised and a desceiption is given of the flora and fauna particularly associated with this type of woodland. The evidence for considering the flora and fauna of these areas to be relics of those of the primeval forest, and to be indicators of continuity of habitat, is investigated. Particular attention is given to epiphytic lichens and saproxylic Coleoptera and Diptera. A selection of sites considered to be important for conserving their flora and fauna of pasture-woodland is listed.

TO OUR CONTRIBUTORS

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

Edited by

P. A. SOKOLOFF, M. Sc., C.Biol., M. I. Biol., F.R.E.S.

with the assistance of

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LYSANDRA CORIDON (LEP.: LYCAENIDAE) IN THE NORTH : THE BERMUDA TRIANGLE?

By W. E. RIMINGTON*

Recently, while preparing an article on the possible historical presence of the chalkhill blue butterfly (*Lysandra coridon.* Poda) in Yorkshire (Settle), I came across an article by A. E. Wright disputing the hitherto almost unanimously accepted records for the insect in Lancashire and Westmoreland. For two reasons I had never disputed these old records nor had I noticed their absence from the National Distribution Maps. Firstly because they have been reproduced in virtually every work from Coleman (1860) to Howarth (1973) and secondly because I possess a specimen with full data from the area in question. Since the validity of these records was central to the theme of my original article, and because their rejection to me constituted the "Bermuda Triangle" of entomology I looked again into the matter.

Wright's argument is convincing and for various reasons must stand but on reading the article, together with examining other evidence, one is left with the feeling that all has not been said, that evidence, however circumstantial, has been overlooked and that on occasion individuals have been given a 'bad press'. Wright's arguments ran briefly thus:

1. Stainton (1857) did not mention any records for the area. It is noteworthy here that neither did Stainton mention records for Lincolnshire.
2. That no records were available prior to 1859, in which year Anthony Mason apparently showed a series to none less than the eminent entomologist C. S. Gregson supposedly taken at Grange – the year being unspecified but most probably 1858 or 1859 – and apparently adding that the butterfly was the commonest blue present. Gregson reporting the incident in the *Entomologist's Weekly Intelligencer* (1859) expressed "surprise" at the captures. Wright casts further doubt on Masons testimony by quoting an advertisement which he placed in the same journal (1857. **2** : 147) requesting *coridon* in exchange for other species, the implication being that the series shown to Gregson in 1859 were those obtained by exchange in 1857 and that this dubious business was the origin of all subsequent and false reports of *coridon* as a Grange insect.
3. That despite the numerous records from Grange, Warton Crags, Silverdale, Arnside, Milnthorpe, Beetham from 1859 to 1892 and Witherslack in 1910, in no case does the recorder appear to have seen or taken the insect himself, nor can any of their

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specimens be traced. The well known entomologist B. H. Crabtree is quoted in this latter respect and J. Davis Ward, an experienced Grange entomologist, is quoted (diaries) as regarding all Grange records as "very doubtful". Similarly H. Massey (in Tutt 1910).

The recorders quoted by Wright – apart from Mason – included J. B. Hodgkinson who gave most of the above stations in Newman (1869); Alfred Owne (in Newman 1869), Grange; Robert Marris (in Morris 1870), Grange; J. Arkle (1886), Grange; George Loxham (in Forsythe, 1905), Warton Crags and Arnside Tower. There is another record briefly referred to by Wright. Hodgkinson (1888) reports "This butterfly (*coridon*) used to occur at Grisedale at the foot of Saddleback in Cumberland. I have seen specimens taken there by Mr. Hope of Penrith." This again is circumstantial and after examining this record in connection with Yorkshire *coridon* I am inclined to feel that the relationship between Grisedale, Saddleback and the larval foodplant horseshoe vetch (*Hippocrepis comosa*) is suspect. There is however one of the several Grisedales near to Tebay and adjacent to a recorded station for horseshoe vetch. Nevertheless poor Mr. Hope it seems is likely to suffer the same fate as Anthony Mason

4. That Porritt in his List and Supplement of the Lepidoptera of Yorkshire (1883 and 1903) did not give *coridon* as a Yorkshire insect. In this context it is worth noting that Porritt is known to have missed or disregarded records which, even if unacceptable, merited a footnote, including the Settle one for *coridon*. Hodgkinson (1885) recalled that some twenty years previously a man from Settle had told him that the chalkhill blue flew "in profusion about or near Settle and Bentham." Apparently the man, of whom we know nothing, had pictures (most probably a decorative display) made of the butterfly. Hodgkinson in an interesting but again inconclusive reference to Warton Crags continues "The species till lately existed under Warton Crags near Carnforth, ground that I go over at all times of the year. Where *Thecla quercus* and *L. corydon* used to swarm, not one has been seen for years."

Interestingly, Settle is but twenty miles from the other localities and is a recorded station for horseshoe vetch, as in fact are all the other stations given for *coridon*. It is easy to overlook this point at a time when the larval foodplant for *coridon* was not determined.

Wright cannot have seen the above reference to Yorkshire *coridon* nor can he have seen the letter in the same journal (*Naturalist* 1885) in which Herbert Goss writes "this species certainly occurred in abundance in the neighbourhood of Silverdale. In the autumn of 1870 I received a number of specimens of it from Mr. James

Murton." Goss continues in a reference to none other than Anthony Mason "and I was informed in June 1883 by Mr. Anthony Mason that this species though previously unknown in the district had suddenly appeared in abundance at Silverdale in 1869 or 1870 and had as suddenly disappeared."

This then leaves us with another series reputedly taken in the area, another recorder in Mr. Murton and Mr. Masons continued insistence that the butterfly was at least formerly present, this time at Silverdale. Four series in all including one said to have been taken in 1910 at Witherslack by Mallinson but dismissed by Wright because none had been seen subsequently. But what do we make of the maligned Anthony Mason; had he like Seaman and his black hairstreak, discovered a gold mine in the North, was he a romancer, or a serious but now misunderstood entomologist? Gregson evidently did not doubt him, his "surprise" lay in the fact that the captures of *coridon* were on limestone and not chalk; in the same note he mentions Masons first recording of the brown hairstreak (*Thecla betulae.* L.) at Grange – a record which was substantiated subsequently. Gregson would in any event surely have cleared publication with Mason who as an occasional contributor to the Intelligencer after this seems to have had nothing to hide. Also we do not even know whether Mason obtained any *coridon* by his advertisement.

Of the other recorders mentioned by Wright, Marris may be dismissed, reference to Morris (1853, first edition) illustrates the point. But why did Hodgkinson an "old friend" of Gregson and a highly competent and respected entomologist who had worked the general area for years, repeatedly lend his name apparently without personal sightings to these records? In considering this question we should recall that he had seen at least one series purporting to have been taken in the district and by his own admission had not visited Arnside until 1877. We should realise that areas now well worked and accessible were not so then and that the history of entomological recording is littered with surprises. Massey (in Tutt 1910) says of Arnside "twenty five years ago, very little worked entomologically" and the same was certainly said of Settle about 1880.

Since commencing a compilation of records of the butterflies of the Doncaster district I have become uneasy about the dismissal of old records on the grounds that the insect should have been seen more frequently or that more specimens should exist. There are single but unimpeachable nineteenth century records for species here for which no specimens can be found. Murder without the body is difficult to prove but in the old days labelling was usually absent, incomplete, or numerical.

Then there is the question of my specimen which has printed data: C. F. Johnson. Witherslack 1913 and handwritten 2 (or 21)

8. I had always suspected this data until I learned from Wright of Mallinsons reported capture of five specimens in 1910 at Witherslack. Johnson was a respected entomologist and a Fellow of the Entomological Society of London; moreover I have ascertained that he did visit Witherslack in 1913. Clearly Mallinson's specimens cannot now be dismissed so lightly. It is I think unlikely that at least the earlier – if genuine – records were the result of bred releases in view of the uncertainty regarding the foodplant which in contemporary literature was given as "various vetches, *Lotus, Anthyllis* and wild thyme". How well the larvae accept other of these plants in captivity I am unsure since my breeding of *coridon* is restricted to horseshoe vetch.

That so many recorders could have believed, that several series should apparently have been taken and seen and that the precise areas involved should contain the then undetermined larval foodplant, all in the total absence of the butterfly seems almost to ask too much, but it may indeed be so. There is, however, one last thought. It is well known that some species undergo periodic and sometimes violent fluctuation in numbers, climate and range undoubtedly being factors and that *coridon* if ever it was present near Grange was at the edge of its range. Masons reported years of abundance for *coridon* at Grange and Silverdale were 1858 or 1859 and 1869 or 1870 respectively, followed by rapid decline at Silverdale. Examination of climatic records for 1847 to 1875 reveals that the only four hot summers during the period were 1857, 1859, 1868 and 1870; 1858 marginally missing the group and 1869 being average.

It is tempting to think that at least the very early records were not unreasonable and that even though later ones may have been hearsay Anthony Mason might have witnessed and recorded the passing of a relict population at the extremes of its range.

References

Arkle, C. J. (1886). Entomology in north Lancashire. *Entomologist* **19**: 242.

Coleman, W. S. (1860). *British Butterflies.*

Forsythe, C. H. (1905). A list of the macrolepidoptera of Lancashire and district *Entomologist* **38**:88.

Goss, H. (1885). The lepidopterous fauna of Lancashire and Cheshire.*Naturalist* **10**: 206.

Gregson, C. S. (1859). Thoughts on geographical distribution. *Entomologist's Weekly Intelligencer* **7**: 54.

Hodgkinson, J. B. (1878). Entomological rambles – 1877. *Entomologist* **11**:112.

Hodgkinson, J. B. (1885). *Lycaena corydon* in the north of England. *Naturalist* **10**:2-46.

Hodgkinson, J. B. (1888). *Lycaena coridon* in Cumberland. *Entomologist* **21**:54.

Howarth, T. G. (1973). *South's British Butterflies.*

Morris, F. O. (1853, 1870). *A history of British butterflies:* 180.

Newman, E. (1869). *The illustrated Natural History of British Butterflies and Moths* :132.

Stainton, H. T. (1857). *A manual of British butterflies and moths.* **1**:60.

Tutt, J. W. (1910). *British Butterflies* IV: 102.

Wright, A. E. (1940). *Lysandra coridon:* its reputed occurence in Lancashire and Westmoreland *Entomologist* **73**:217-221.

WINTER RECORDS OF THE PAINTED LADY BUTTERFLY, CYNTHIA CARDUI L. – Whether the painted lady is able to sometimes overwinter in the south of England is difficult to prove unless "hibernating" individuals are found alive in late winter. To my knowledge this has never been recorded and the pattern of occurrence of the few mid-winter records suggest that these butterflies may have been primary immigrants. Over the Christmas and New Year period of 1987/88 there have been, so far, eighteen records of the painted lady:

CORNWALL E. Portwrinkle, 25.12 (S. Madge); St Clear, 25.12 (P. J. Reay); Siblyback Reservoir, 31.12.87 (D. & G. Conway); Portscatho, 6.1.88 (G. Jackson); Salter Mill, Carr Green, 7.1.88 (S. Madge); Portholland 16.1.88 (R. Lane).

CORNWALL W. Phillack, Hayle, "late December" (L. P. Williams); Marazion, 7.1.88 (C. C. Barnard).

DEVON S. Devonport, 23.12 (A. R. Pease); Ernsettle, Plymouth, 24.12 (R. W. Gould); Plymouth, 25.12, two, and one, 5.2.88 (A. Archer-Lock).

DORSET. Worbarrow Bay, 25.12; Studland, 31.12, two, (K. N. Baskcomb).

SUSSEX E. Lewes, 20.12; Brighton, 22.12 (R. Leverton per C. R. Pratt).

Mr. Penhallurick, of the Truro Museum, has traced a further, early record – January 17th. 1936 St. Marys, Isles of Scilly (R. Trotter), and in 1966 there were three early records of the painted lady in Cornwall: February 2nd. Downderry (S. C. Madge); February 6th. Mevagissey (Unknown) and February 26th. Pendower (R. D. Penhallurick).

R. F. Bretherton tells me that he has been unable to trace any December records for the painted lady in the British Isles, apart from a single record for 6.12.1979 (Archer-Lock, *Ent. Rec.* **92**: 87), at least since 1940, but that in 1952 there was a substantial early immigration of Lepidoptera between February 21st. and

March 17th., that included no less than 482 painted ladies, with 14 on March 5th. at Redruth, Cornwall (W. J. Tremewan).

Records of the Caradon Field and Natural History Club show a pattern of late individuals of the painted lady into early November in south-east Cornwall, with the latest being on November 29th 1986.

Mr. Bretherton is of the opinion that following the spell of south-westerly winds and mild temperatures over Western Europe from mid December over Christmas 1987, long-distance migrants such as the painted lady are much more likely to be genuine immigrants from south-west Europe or North Africa rather than to have survived the rather cold late November/early December spell that was experienced in southern Britain a few weeks previously. S. C. MADGE 2 Church Row, Sheviock, Torpoint, Cornwall PL11 3EH. (NOTE: if readers have any further records of either *cardui* or any other lepidopteron over this period, would they please send their records to R. F. Bretherton as soon as possible – Ed.)

HAIRSTREAK ROOSTING HABITS. – While collecting in northern Greece end July 1987 along the Greco-Bulgarian border, we entered a dense stretch of deciduous forest with a very rich undergrowth. The weather was humid and the temperature was about 46° centigrade, making the situation almost unbearable. From about 6pm to 7.30pm we noticed that hordes of both male and female *Quercusia quercus* L. descended from the tall trees and took roosting positions on the undergrowth at no more than one metre off the ground. It was also rewarding to discover amongst them a few *Thecla betulae* L., both male and female. The latter barely enters into Greece along its northern borders and any record of it from this country is worth mentioning. – JOHN G. COUTSIS, 4 Glykonos Street, Athens 10675, Greece. NIKOS GHAVALAS, 30 Karaoli-Dhimitriou Street, Athens 12461, Greece.

CATOCALA NUPTA L., THE RED UNDERWING, (LEP.: NOCTUIDAE) IN CUMBRIA – On the morning of 5.x.1987 I found a perfect, male red underwing in my m.v. trap, which is situated under the white walls of a house, set in thick, decidious and coniferous woodland. This is the first *nupta* seen here in 20 years of light trapping, during which time 401 species of macrolepidoptera have been recorded.

The only original record for this species is Cumbria (formerly Cumberland and Westmorland) is given by Stephens (1829) *Illustrations of British Entomology* 3:133 as ". . . Davidson Bank [Carlisle district] – T. C. Heysham Esq. . . .". I am grateful to Dr. N. L. Birkett for his comments and help in tracing this record. J. BRIGGS, Frimley House, Deepdale Close, Slackhead, Milnthorpe, Cumbria.

HYALOMYODES (DIPTERA; TACHINIDAE), AN ENDOPARASITOID OF TETRIGOIDEA (ORTHOPTERA)

By D. KEITH McE. KEVAN and RUSTAM T. B. KOSHNAW*

In the course of morphological studies on members of two families of groundhoppers (Orthoptera, Tetrigodea, Tetrigoidea), one of us (R.T.K.) discovered a single living endoparasitoid dipteran larva (Fig. 1) within the body of a freshly-killed, adult female *Tetrix subulata* (Linnaeus) (Tetrigidae, Tetriginae) which was in process of dissection. The maggot (a phasiine tachinid larva, about 3 mm long) was located in the region of the metathorax and first three abdominal segments. The host had been collected locally, in the vicinity of the Morgan Arboretum, Macdonald College Campus of McGill University, Ste-Anne-de-Bellevue, Quebec, Canada, on 14.x.1984, and was dissected on the following day. A stock of *T. subulata* (as well as other species of Tetrigoidea), originating from the same general vicinity, was, at the time, being maintained at room temperature, in the laboratory and, about a month later (18.xi.1984), two small tachinid flies were found in the rearing cage. As there was no other feasible source, the adult flies had, without doubt, developed from endoparasitoid larvae similar to the one discovered. Judging by the size of the adult flies, that larva would have been about half grown. We are grateful to Dr. B. E. Cooper of the Biosystematics Research Centre, Agriculture Canada, Ottawa, for identifying the adult flies as *Hyalomyodes triangulifer* (Loew).

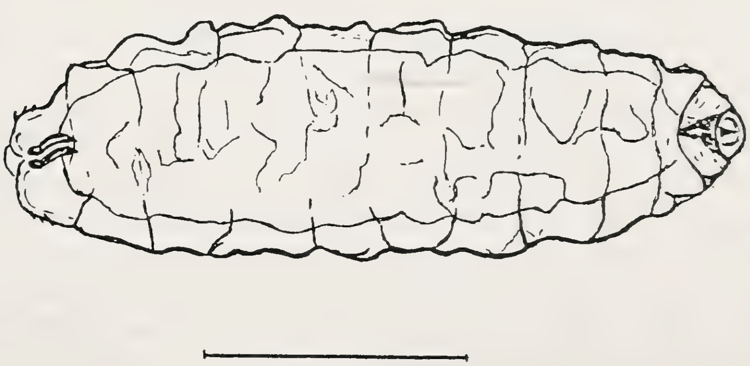

Fig. 1 Half-grown larva of *Hyalomyodes triangulifer* (Loew), ventral, from the body of *Tetrix subulata* (L.). Scale bar = 1mm.

A further single larva, apparently identical with the first, was subsequently obtained from an adult female of *Tetrix ornata ornata* (Say) (Tetrigidae, Tetriginae), collected from the same general area

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as before on 21.iv.1985, but not dissected until 28.vi.1985. Yet another larva was found in a female *Tettigidea lateralis* (Say) (Batrachideidae, Batrachideinae), collected (again from the same area) on 9.vi.1985, and dissected on the same day.

Although, long ago, Hancock (1902) mentioned various predators and an ectoparasitic mite attacking Tetrigoidea, to the best of our knowledge, these are the first records of an endoparasitoid in the Tetrigoidea, which have generally been considered to be remarkably free from such natural enemies.

H. triangulifer (sometimes incorrectly written *"triangulifera"*, and at one time placed in the genus *Clistomorpha* Townsend) belongs to the subfamily Phasiinae (tribe Strongygastrini). Brooks (1942) indicated the general North American distribution then known for the adults. Besides various of the United States, he noted the Canadian provinces of Nova Scotia, New Brunswick, Québec an Ontario in the east and British Columbia in the west, but not the Prairie Provinces, the North, or Newfoundland-Labrador (the last, at that time, not yet part of Canada). The larval stages were described and partially figured by Thompson (1954), who indicated the host insects known at the time (all Coleoptera) and outlined what little else was known or surmised about the biology of *H. triangulifera* [sic]. This included the possible method by which the larva gained access to the body of its host.

Larvae of *H. triangulifer* have been recorded as endoparasitoids of various genera of Coleoptera belonging to the families Alleculidae, Chrysomelidae, Coccinellidae and Curculionidae (usually from adults but sometimes from larvae); the species has also been reported from the larva of a plume moth, *Platyptilia carduidactyla* (Riley) (Lepidoptera, Pterphoridae) in California. References to the various host records are given by Arnaud (1978), but there is none for any species of orthopteroid insect.

A wide host range is apparently not unusual among Phasiinae, and the related *Leucostoma simplex* (Fallén) (Leucostomatini), an endoparasitoid mainly of Heteroptera, is also known from Acrididae (*cf.* Arnaud, 1978). On the other hand, it is conceivable that the record of *H. triangulifer* from a plume moth (Lang, 1950) might refer to another species, and there could perhaps be an element of doubt concerning the precise species involved in the present case. That Tetrigoidea are immune to attack by insect endoparasitoids, however, is manifestly not true.

References

Arnaud, P. H. 1978. A Host-Parasite Catalog of North American Tachinidae (Diptera). *Misc. Publ. Sci. Educ. Admin. U.S. Dept. Agric.* **1319**: [i-iv,] 1-860.

Brooks, A. R. 1942. *Clistomorpha, Psalidopteryx* and allies (Diptera, Tachinidae). *Can. Ent.* **74**: 140-150.

Hancock, J. L. 1902. *The Tettigidae of North America.* Chicago; The Lakeshore Press: viii + 188 pp, XI pl.

Lang, W. H. 1950. Biology and systematics of plume moths of the genus *Platyptilia* in California. *Hilgardia*, **19**: 561-668, pl. 1-16.

Thompson, W. R. 1954. *Hyalomyodes triangulifera* [*sic*] Loew. (Diptera, Tachinidae). *Can. Ent.* **86**: 137-144.

A PLEA FOR THE RETENTION OF THE OLD COUNTIES IN RECORDING. – The Watson-Praeger county and vice-county system of faunistic recording has proved itself a valuable instrument for most purposes, where smaller divisions may not be required. Among its advantages is that of being readily adaptable to earlier usage based on counties alone, in which the literature abounds; any change, therefore, which upsets this convenient harmony must, from the standpoint of recording, be considered retrograde. I am thinking here, of course, of the Local Government Act of 1972 which altered the names and boundaries of certain English and Welsh counties for administrative reasons. It seems to me that these changes do not in any way forbid the retention of the older system in published records and county lists. (Furthermore, many of us may well object on general grounds to the idea that centuries of history and ingrained tradition may legitimately be swept away overnight by a stroke of the bureaucratic pen.) The inconvenience of having to collate the two systems – even though their differences are not extensive, the chances of errors resulting, and the waste of time involved, are sufficiently obvious. Also, we should spare a thought for future workers whose task will be made onerous enough by all the nomenclatural changes, etc., over a long period, without adding to their confusion from another source. I am glad to see that in practice many recorders do in fact continue to employ the traditional and time-honoured system.

I should like in passing to put in a good word for the county and vice-county symbols, which for some reason seem almost to have dropped out of use in favour of numbers. For many, the latter are meaningless without a key; whereas, in contrast, the symbols are readily understood and memorized, to which end they were in fact devised. – A. A. ALLEN, 49 Montcalm Road, London SW7.

ACROLEPIOPSIS BETULELLA CURTIS (LEP.: YPONOMEUTIDEA) IN ARGYLLSHIRE – The only published localities for recent records of *Acrolepiopsis betulella* are Beinn Eighe NNR, Wester Ross (M. R. Young (1985) *Ent. Gaz.* **36**, 298-9) and Roslin Glen LNR, Midlothian (K. P. Bland (1986) *Ent. Rec.* **98**, 241-3). I have

now reared the species from seedheads of wild garlic (*Allium ursinum*) collected on 23.vii.1987 in the gorge of the Allt Cruiniche on Beinn Cruachan, Argyllshire (O. S. Grid Ref. NN0329;v.c.98). The first imago emerged on 20.viii.1987. This species should be looked for wherever its food-plant is well established. K. P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS.

NOTES ON BREEDING SABRA HARPAGULA ESP., THE SCARCE HOOK-TIP (LEP.: DREPANIDAE) – on 10.vii.1987 Colin Penney and I were fortunate in attracting a female of this local moth to m.v. light in a west country locality. The female was confined to a laying cage improvised from an half-gallon ice-cream container filled with dry earth and containing a pot of wet soil in which fresh sprigs of foodplant (*Tilia cordata*, the small-leaved lime) and bramble (for nectar) were placed. The whole was enclosed in netting, supported on a wire frame.

The moth remained alive for 12 days, laying a total of 45 ribbed, spherical eggs, five on the edges of lime leaves, the remainder on the netting. The eggs, on small pieces of substrate, were sleeved onto a growing *Tilia cordata*; growing leaves were loosely wrapped round the eggs, to help newly hatched larvae to start feeding. The first of these hatched on 24.vii.1987 but only five larvae were found on later examination. These were left sleeved on foodplant for four weeks, by which time they had grown to around 8mm long. Four were left in the sleeve, and the fifth was brought indoors, becoming fully grown towards the end of September, pupating on 28.ix.1987. The mature larva was 14mm long, head light-brown, thoracic segements chocolate-brown, saddle and rear dorsal pale ochreous-brown. The larva sits on the leaf with head and rear segments raised. Larvae kept out of doors in a sleeve pupated between 6 and 16.x.1987.

The mature larva eats every part of the leaf on which it is sitting, even if fresh foliage is close by. The larva moves infrequently, spinning a silk pad on completion of every change in position. At the end of the growth period, the larva spins a thin, but tough cocoon within a growing leaf, pupating three to four days later. The pupa is pinky-brown in colour, dusted with powder. Presumably this is the natural pupation site, with the leaf falling to the ground in the autumn.

This species appears to be difficult to rear, and there are few accounts in the literature (for example, Buckler, W. (1888) *The larvae of British butterflies and moths* III, 66-72; Griffiths, G. C. (1899) *Ent. Rec.* **11**: 282-283).

My sincere thanks to Bernard Skinner for the use of his small-leaved lime, and for observations on the larvae. ROY McCORMICK, 125 Brocks Drive, North Cheam, Surrey.

POSSIBLE ADAPTIVE SIGNIFICANCE OF "TAIL" STRUCTURE IN "FALSE HEAD" LYCAENID BUTTERFLIES

By ADRIAN M. RILEY* and HUGH D. LOXDALE*

Robbins (1980, 1981), in his papers on the "False Head" hypothesis of Lycaenid butterflies, argues that the false head on the hindwings of some species (i.e. especially *Arawacus aetolus* Sulzer, Fig. 1) provides survival advantages against predator attack. It is also said (cf. Cott, 1940; Robbins, 1980) that movement of the hindwings in the vertical plane when such insects are at rest enhances the false head deception by making the "tails" appear similar to moving antennae. In this short paper we suggest that movement of the false antennae in *A. aetolus* occurs more by virtue of their shape than through movement of the hindwings. Hindwing movement may be associated with other biological functions e.g. scent scattering (cf. Robbins, 1980).

Whilst setting a specimen of *A. aetolus* recently caught in eastern Venezuela we noticed that heat rising from the hand when the dead insect was held between thumb and forefinger caused life-like

Fig. 1 left-hand underside of female *Arawacus aetolus* Sulz. showing false head. Guyana Trail, east Venezuela (x 5.6).

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movement of the false antennae. This movement was very similar to that observed in the field. Close examination showed that each "tail" is twisted along its length like an aeroplane propellor (Fig. 2). This twist can clearly be seen in the photograph of a living *aetolus* shown in Robbins' 1980 paper (his Fig. 1). In Robbins' 1981 article where a drawing of *aetolus* accompanies the text (his Fig. 1) the "tails" are illustrated as being straight. This is probably erroneous as it appears to be the same individual as that photographed for the 1980 paper.

To demonstrate the effectiveness of this configuration we made models of three types of "tail" from fine paper (Fig. 3). These were held over a small heat source and the results observed. Model A showed only slight movement from side to side which, when viewed laterally by a potential predator, would not give the impression of moving antennae. In contrast, models B & C showed much vertical movement which would give the impression of twitching antennae when viewed from the side.

The models which presented a flat surface to the rising warm air resulted in the most antenna-like movement. If the butterfly relied only on convected warm air for this (as may be the case; the butterfly frequently rests on sun-warmed tropical foliage) either model B or C would provide the necessary configuration. However, if the configuration were to respond to horizontal breezes as well it would have to incorporate both vertical and horizontal surfaces. Model C satisfies these requirements. Model C also has the advantage of giving the more irregular, circular movements associated with real antennae. In nature, model B would be impossible to achieve without twisting from the vertical axis. Twisting of this sort would then result in structures of the model C design.

Based on this evidence, we suggest that the twisting of the tails in *A. aetolus* is an adaptive mechanism evolved specificially to utilise air currents for the purpose of imitating antennal movement, thus accentuating the false head deception.

References

Cott, H. B. (1940) Adaptive colouration in animals. Methuen & Co. Ltd., London.

Robbins, R. K. (1980) The Lycaenid "false head" hypothesis: historical review, and quantitative analysis. *J. Lepid. Soc.*, **34**, 194-208.

. . . . . . (1981) The "false head.. hypothesis: predation and wing pattern variation of Lycaenid butterflies. *Amer. Nat.* **118**, 770-775.

Fig. 2 Diagrammatic representation of *A aetolus* hingwing showing twist in "tails" (enlarged).

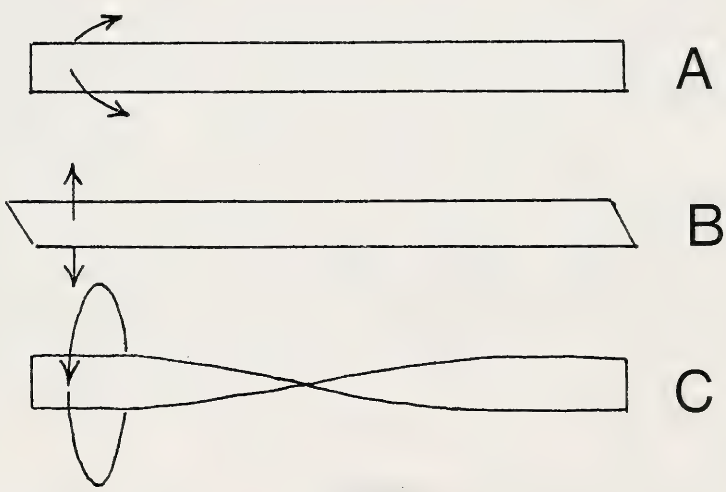

Fig. 3 The three types of model used to demonstrate movement caused by convected air. Direction of movement is shown by arrows.

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HEMEROBIUS MARGINATUS STEPHENS (NEUROPTERA: HEMEROBIIDAE) IN A WILTSHIRE WOODLAND IN 1987. – A single male example of *Hemerobius marginatus* was captured in a malaise trap operated in Langley Wood National Nature Reserve during the last week of June and the first week of July, 1987, apparently a new record for Wiltshire. According to F. J. Killington's *A monograph of the British Neuroptera* (Ray Society: 1937), most of the British localities are northern, and Killington himself had never seen an example from the south of England. Scottish records predominate, whilst the counties listed for England and Wales are Cambridgeshire, Cheshire, Cornwall, Cumberland, Denbigh, Derbyshire, Durham, Herefordshire, Hertfordshire, Lancashire, Northumberland, Staffordshire, Suffolk, Westmoreland and Yorkshire. The insect is also recorded for Ireland. Later, in 1959, F. C. Fraser's key to Mecoptera and Neuroptera in the Royal Entomological Society series *Handbooks for the Identification of British Insects* vol. 1 parts 12 and 13, states simply *"Distributed in the north of England, Scotland and Ireland".* Amongst the specimens in the British Neuroptera cabinet at the Natural History Museum in South Kensington English counties are represented by Lancashire, Shropshire and Cumbria only. An Essex record published in *The Neuroptera of Essex* (Passmore Edwards Museum, 1985) is now known to be erroneous.

It would seem possible, therefore, that *H. marginatus* may indeed occur, albeit in low density, in suitable habitat elsewhere in southern England, having quite simply been overlooked by entomologists. It is principally an insect of deciduous woodland, and specific associations have been noted with birch, alder and hazel. The Langley Wood malaise trap was sited across a stream in a damp hollow amongst alders.

I am grateful to Peter Barnard at the Natural History Museum for allowing me to examine the specimens in the National Collection. COLIN W. PLANT, Passmore Edwards Museum, Romford Road, Stratford, London E15 4LZ.

LARVAE OF OURAPTERYX SAMBUCARIA (L.) (GEOMETRIDAE) FEEDING ON SOLIDAGO CANADENSIS (L.) (COMPOSITAE) – Larvae of this species feed on the leaves of a wide variety of shrubs and trees and appear to be unusual on herbaceous plants. In September 1987 I found three larvae on the alien goldenrod, *Solidago canadensis*, growing in my Oxford garden. The plant was growing some distance from the nearest shrubs and trees and they therefore could not have strayed; they were later transferred to birch. DENIS F. OWEN, 2, Shelford Place, Headington, Oxford.

THE OCCURRENCE OF THE GENUS *STRANGALIA* SERVILLE (COL.: CERAMBYCIDAE) IN THE BRITISH ISLES

By R. R. UHTHOFF-KAUFMANN*

Introduction

There are some sixty British Longicorn Coleoptera, fairly representative of the European fauna. The two largest genera, *Strangalia* and *Leptura* L., sometimes grouped as one genus (Joy. 1932), contain respectively seven and six species, although a strong case has been made for the re-inclusion of *Leptura virens* L. (Allen, 1968) as, at least, an extinct species; it is currently omitted from the latest British catalogue (Kloet & Hincks, 1977).

The Cerambycidae, because of their handsome appearance, markings, elegant shape and long antennae, are without doubt among collectors' favourite captures: members of the genus *Strangalia* are no exception. The widespread use of pesticides has fortunately not affected the Longicornia too greatly as they are largely amphixylophagous. This paper records the distribution, habitat and ecology (where it is known) of *Strangalia.*

For brevity's sake county and vice-county alphabetical symbols are used (Balfour-Browne, 1931); italicized letters indicate that it is from there that the beetle has been most widely found; bracketed letters mean doubtful, unconfirmed or untraceable records; a dagger (†) signifies a fortuitous specimen imported from elsewhere; *post*-1970 captures are marked by an asterisk (*).

Strangalia revestita (L.)

This is undoubtedly one of the very rarest of the British Cerambycidae, single examples of which occur unexpectedly at long, infrequent intervals. A few specimens were collected early last century (Stephens, 1831, 1839); by the 1860s its validity as an indigenous beetle was in question (Waterhouse, 1861). The name appears, however, in all the British catalogues, save one (Beare & Donisthorpe, 1904). Joy, 1932, excludes it from his work. Very few public or indeed private collections contain *S. revestita*; there are, for instance, just seven specimens of British provenance in the British Museum (Natural History) Collections, only one of which has a full data label. The earliest British record appears to be that of an example 'In mus. D. Beckwith.' (Marsham, 1802), present whereabouts unknown. There are two damaged specimens in the Hope Department of Entomology, Oxford, again data-less.

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The insect has a distribution largely confined to the Thames basin and a few other scattered localities.

ENGLAND: BD* BK CB* DM† MX NH SE SH SR WK (WW).

The imago has been swept from flowers and by beating apple trees and oaks. When it has been taken, it has usually been in the vicinity of woodlands. One of the latest examples was found crawling along a sandy heathland track (Allen, 1972). The larval pabulum is the wild cherry (*Prunus avium*); no larvae have yet been found in this country, although the tree is far from uncommon. June is the only recorded month of capture.

S. nigra (L.)

An insect which is mainly southern in range; there are only a few records of its capture north of the line R. Severn to the Wash. Nowadays, an increasingly uncommon little beetle, whose numbers appear to be in decline.

ENGLAND: BK CH DT EK (EC) (EN) (ES) *EX* L LR NH NO NS OX SD SE *SH* (SP) *SR* ST SW (WC) *WK* (WN) WO (WS) WX*.

WALES: GM.

By sweeping flowers such as dog rose, ox-eye daisy, *Ranunculus Rubus,* various umbellifers, *Viburnum* and woodspure. There is a solitary record of its having been swept from larch. The larval stages have not been described from this country (Duffy, 1953), but it has been suggested that the foodplants are deciduous (broad-leaved) trees (Freude, 1966). The adult is about from May to July.

S. aurulenta (F.)

One of the most beautiful native Cerambycids, banded ochreous-yellow and black, covered with thick golden pubescence, which, in living specimens, give it a glowing, almost iridescent appearance. It is mainly southern, south-western and western in range, although there are a few westerly records, some possibly adventitious. Not uncommon in a number of counties and apparently spreading slowly in Wales.

ENGLAND: (DM) EC GW HT (L) MX *ND* NS *SD SH* SS WC WX*.

WALES: GM RA.

SCOTLAND: Recorded without any details (Fowler, 1883).

IRELAND: SK WA WC *WI.*

By sweeping *Angelica*, brambles, broom, *Pyrus*, scabious and various umbellifers. The larva is chiefly found in oak, it is also associated with alder, ash, aspen, beech, birch, horse chestnut,

sour cherry, Spanish chestnut, walnut and willow (Duffy, 1953). The mature beetle occurs from June until August.

S. quadrifasciata (L.)

A very widely distributed species which is becoming scarcer. It is easily distinguished from *S. maculata* because of its heavier build and broader, less variable black elytral fasciae.

ENGLAND: BD BK CB CH CU DM *DT* DY* EC *EK EN ES EX* EY GW* HF* HT IW L LN MX ND NE NH *NM* NN NS NY OX *SD* SE *SH* SN SP *SR** SS ST SW* SY *WK* WL WN WO WS WX WY.

WALES: BR GM MM MN PB.

SCOTLAND: AM AS* B CT DF EI* EL HD KI (LA) M PC PM* PN* SS WI*.

IRELAND: WC WI*.

A localized insect, sometimes quite common where it does occur. It is essentially a lover of sunshine and is most frequent on hot, sultry days. It settles on *Angelica*, bracken, brambles, hawthorn, hogweed, meadowsweet, ragwort, *Rubus, Spiraea*, thistles, valerian and woody nightshade. The larva feeds in alder, aspen, beech, birch (its favourite pabulum), hazel, oak, poplar and sallow. It has also been found in spruce (Duffy, 1953). The beetle has been taken as early as March, but more usually from June until August.

S. maculata (Poda)

The most widely distributed of all the *Strangalia* species, ranging from Northumberland southwards throughout almost all of England. Central Wales still requires to be more thoroughly worked as does Ireland, although it has been remarked (Stelfox, 1937) that this beetle is probably quite widespread in the latter country, the lack of records being due to a scarcity of observers rather than to that of the beetle. In Scotland it is still very rare.

ENGLAND: *BD BK** BX CB *CH CU DM DT* (DY) *EC EK* EN *ES* EX* EY* GE* GW* *HF* HT* HU *IW LN LR* ML MX MY ND NE *NH NM* NO NS NW* *OX SD* SE *SH* SL SN *SR** SS *ST* SW **SY** WC *WK** WL WN* WO WS *WW WX* WY*.

WALES: CD CR *GM* MM* *MN* PB.

SCOTLAND: B KB.

IRELAND: CW DO KK NK SK SL WC WI.

A local, often common species which, like *S. quadrifasciata*, prefers warm sunny days when it may be seen in short flight and settling to feed on a variety of flowers, including *Achillea, Angelica*, brambles, dogrose, hawthorn, hogweed (a great favourite), honeysuckle, leek, meadowsweet, *Oenanthe, Philadelphus*, privet, rambler

roses, *Rubus, Spiraea,* sweet william, thistles and *Viburnum.* The principal food of the larva is birch, but by no means confined to that tree: it is also found in ash, aspen, beech, hazel, hornbeam, oak, sallow, Spanish chestnut and willow. It is not averse to conifers and attacks *Picea.*

S. maculata is particularly subject to extremely variable elytral markings, ranging from albinotic to melanic forms. These aberrant forms are very stable and more often than not outnumber the type species in a given locality (Lee & Warsop, 1981). Illustrations in British books on Coleoptera all, save one (Lyneborg, 1977), depict one or other aberration.

British Coleopterists writing in the early part of last century refer to some of these varietal forms (Marsham, 1802; Turton, 1806; Stephens, 1829); two varieties were still catalogued until the 1860s (Waterhouse, 1858; Crotch, 1863); thereafter the names are dropped until the late 1940s (Kaufmann, 1946, 1948). It suffices to say that British cataloguers seem unwilling to include the many colour variations which exist here.

The following aberrations of *S. maculata* have been found in the British Isles:—

ab. *impunctata* Mulsant. (Planet, 1924, fig. 24.)
ENGLAND: SR.
ab. *externepunctata* Mulsant. (Martyn, 1792, pl. 27, fig. 10).
ENGLAND: IW LN NE* SD SR SY* WK.
IRELAND: WI.
ab. *stelligera* ab. nov. Anterior fasciae absent and replaced on each elytron by a large central, stellate, concave pentagonal maculation bearing a comet-like tail pointing downwards on the side nearest to the suture. The remaining fasciae fused and confluent at the elytral sides and suture, and with the apical yellow spot greatly reduced, exactly as in ab. *apicalis* Kaufmann.

Fig. 1 Right elytron of *Strangalia maculata* Poda. ab. *stelligera* nov. (enlarged)

ENGLAND: SY* (Sheffield, A. Brackenbury, Esq.)
ab. *mediopunctata* Kaufmann.
ENGLAND: EN *LN* NE* NS SD SR WK.
ab. *binotata* Mulsant. (Linssen, 1959, pl. 122, fig. 10).

ENGLAND: CU IW NO SH WY.
ab. *nigricornis* Stierlin.
ENGLAND: IW.
ab. *separata* Kaufmann. (Fowler, 1890, pl. 122, fig. 10).
ENGLAND: BK CH EC EX HF *HT* LN ND NE* NO NS *SD* SH SR SW SY* WW.
ab. *subspinosa* F. (Waterhouse, 1858; Crotch, 1863).
ENGLAND: EN LN SH SY*.
ab. *seminotata* Kaufmann.
ENGLAND: BK ND NH SH SY*.
ab. *disconotata* Pic. (Fowler, 1890, pl. 122, fig. 9; Stelfox, 1937, fig. 3).
ENGLAND: DT EY HF *LN* LR MY ND *SD* SH SR* SS SW SY* WC WW WY.
WALES: MN.
IRELAND: WI.
ab. *undulata* Mulsant. (Shaw, 1806).
ENGLAND: HT LN SD SH WW WY.
WALES: MN.
ab. *conjuncta* Kaufmann. (Spry & Shuckard, 1861, pl. 79, fig. 1; Wood, 1883, fig., p. 153; Joy, 1932, pl. 111, fig. 10).
ENGLAND: EN *SD* SR SY* WW.
IRELAND: WI.
ab. *manca* Schaufuss. ENGLAND: LN LR.
ab. *suturalis* Kaufmann. ENGLAND: BK LN SH WO WY.
ab. *sylvestris* Kaufmann. ENGLAND: LR.
ab. *dentato-suturalis* Kaufmann. ENGLAND: BK LN NM SD SE.
ab. *kriecheldorffi* Wagner. ENGLAND: LN.
ab. *sinuata* F. Reputedly British (Marsham, 1802, Stephens, 1829), but no specimens seem to exist except one, found by Dr. A. H. Newton in 1942 in Yealmpton, which has the fasciae of *sinuata* and sutural markings resembling *suturalis*.
ENGLAND: SD.
ab. *apicalis* Kaufmann. (Donovan, 1794, pl. 84, fig. 4).
ENGLAND: HT SR WO WW.
ab. *dayremi* Pic. (Rye, 1866, pl. 14, fig. 1).
ENGLAND: EX LN.
ab. *kaufmanni* Pic. ENGLAND: LN.
ab. *bifenestrata* Pic. ENGLAND: NM WO.

S. maculata and all its variations occur from May to September.

S. melanura (L.)

A well-distributed species except for an area stretching from south-western Wales to the Lake district. There is a solitary Scottish

record, unconfirmed, and an Irish example in the National Collection at Dublin, *sine data.*

The sexes are dimorphous, the female being larger than the male and more brightly coloured red and black than the latter.

ENGLAND: BD BK* BX *CB* CU DM *DT* DY EC *EK* EN ES *EX* EY GE* GW* HF HT HU IW L LN (LR) ND NE NH NM *NO* NS NW NY OX *SD* SE *SH** SN *SR** SS ST SW* WC *WK* WL WO WS* WW WX WY.

WALES: GM MM* MN.

SCOTLAND: (BW).

IRELAND: Locality unknown.

A fairly common, occasionally abundant insect, but rather local. The adults may be captured from a variety of blossoms, including brambles, *Euphorbia,* dogrose, hawthorn, hemlock, hogweed, honeysuckle, ox-eye daisy, *Phaseolus,* privet, *Rubus*, scabious, thistles, *Tilea, Viburnum* and yarrow. The larva feeds in the decayed, slender branches of oak and in the roots of *Cytisus;* it has also been found in sycamore (Duffy, 1953) and in spruce (Prof. Owen *in litt.*). Imagines occur from May onwards until September.

S. attenuata (L.)

First described as British, habitat unknown (Marsham, 1802), this species has been extinct in Britain for the last 150 years. . . . somewhat doubtfully indigenous . . .' (Fowler, 1890); '. . . is decidedly doubtfully indigenous. I can learn nothing trustworthy about it, and why it is kept in the *Catalogue*, . . .' (Donisthorpe, 1898). Nevertheless, forty years later, the last-named writes without comment, ' . . . Windsor Forest (Desvignes); bought at the sale of his collection by the late E.W. Janson (*teste* the late Oliver Janson).' (Donisthorpe, 1939). That information is repeated more or less verbatim in a footnote (Allen, 1957) and again '. . . certainly taken in Windsor Forest . . . ' (Allen, 1968).

Omitted from their catalogue (Kloet & Hincks, 1945), as it had been from that of others (Beare & Donisthorpe, 1904; Beare, 1930), *S. attenuata* was re-introduced to the current list (Kloet & Hincks, 1977) as a species now extinct.

Originally found near Salisbury; '. . . several specimens have been captured at different periods . . . ' (Stephens, 1831). '. . . Salisbury and Southend.' (Stephens, 1839): these records must be added to that of T. Desvignes, who was a reliable collector unlikely to have mis-identified the species.

ENGLAND: BK SE SW.

What has happened to Stephens' 'several' examples is open to question. There are two *attenuata* simply labelled '*ex coll.* Power'

in the British Museum (Natural History) Collections, and another pair in the Dale collection, Hope Department of Entomology, Oxford; one is a male specimen with the label 'Little'; the other, a female, has the simple datum 'Burney, 1846'.

The beetle bears a superficial resemblance to *S. maculata*, but it is a much smaller and more slender insect with a rounded pronotum and lacking the two hind tibial spurs which characterize *maculata*. It is, however, faintly possible that *attenuata* exists in some old collections, wrongly determined as micromorphous specimens of *maculata. S. attenuata* was recorded from flowers in June in this country. It has since occurred very rarely in imported timber (Duffy, 1953). Abroad, the larva feeds in horse chestnut and decaying oak (Freude, 1966, Harde, 1984).

Acknowledgements

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References

Allen, A. A., 1957, An old Middlesex capture of *Strangalia aurulenta* F. (Col., Cerambycidae)., *Entomologist's mon. Mag.*, **93**: 91.

————————, 1968, Notes on the genus *Cerambyx* (Col.) in Britain, and on the British status of two other Cerambycids., *Entomologist's mon. Mag.*, **104**: 216.

————————, 1972, *Strangalia revestita* L. (Col., Cerambycidae) in Surrey; with a synopsis of its British history., *Entomologist's mon. Mag.*, **108**: 22.

Aurivillius, C., 1912, Cerambycidae in Junk, W. & Schenkling, S., *Coleopterorum Catalogus*, **39**: 234-236. Berlin.

Beare, T. Hudson, 1930, *A Catalogue of the recorded Coleoptera of the British Isles.* London.

———————— & Donisthorpe, H. StJ. K., 1904, *Catalogue of British Coleoptera.* London.

Browne, F. Balfour-, 1931, A plea for uniformity in the method of recording insect captures., *Entomologist's mon. Mag.*, **67**: 183-193.

Crotch, G. R., 1863, *A Catalogue of British Coleoptera.* Cambridge.

Donisthorpe, H. StJ. K., 1898, Notes on the British Longicornes, *Entomologist's Rec. J. Var.*, **10**:249.

———————, 1939, A preliminary list of the Coleoptera of Windsor Forest. London.

Donovan, E., 1794, *The natural history of British insects*, **3**. London.

Duffy, E. A. J., 1953, *A monograph of the immature stages of British and imported Timber Beetles (Cerambycidae).* London.

Everts, E., 1921, *Ent. Berichten:* 274.

Fowler, W. W., 1883, Natural localities of British Coleoptera, 13, *Entomologist,* **16**: 78.

———————, 1890, *The Coleoptera of the British Islands,* **4**. London.

Freude, H., Harde, K. W. & Lohse, G. A., 1966, *Die Käfer Mitteleuropas,* **9**. Krefeld.

Harde, K. W., 1984, *A field guide in colour to Beetles,* (English ed., Hammond, P.M.). London.

Heyrovsky, L., 1955, *Fauna CSR,* **5**, Cerambycidae. Prague. (Text in Czech).

Hickin, N., 1987, *British Longhorn Beetles.* Princes Risborough.

Joy, N. H., 1932, *A practical handbook of British Beetles.* 2 vols. London.

Kaufmann, R. R. Uhtoff-, 1946, Preliminary notes on *Strangalia maculata* Poda (Col., Cerambycidae) and its aberrations in Great Britain, *Entomologist's mon. Mag.,* **82**: 115-117, 16 figs.

———————, 1947, The Britannic distribution of *Strangalia maculata* Poda (Col., Cerambycidae) and its aberrations, *Naturalist,* July-Sept.: 97-105, 4 figs., 1 map.

———————, 1948, Notes on the distribution of the British Longicorn Coleoptrea, *Entomologist's mon. Mag.,* **84**: 66-85.

Kloet, G. S. & Hincks, W. D., 1945, *A check list of British insects.* Stockport.

———————, 1977, *Check list of Britsh insects,* **11**(3), Coleoptera and Strepsiptera, 2nd ed. London.

Kühnt, P., 1913, *Illustrierte Bestimmungs-Tabellen der Käfer Deutschlands.* Stuttgart.

Lee, W. J. & Warsop, P., 1981, Variation in the Longhorn Beetle *Strangalia maculata* Poda at Wharncliffe Wood, *The Sorby Record,* **19**: 43-44, 12 figs. Alfreton.

Linssen, E. F., 1959, *Beetles of the British Isles,* **2**. London.

Lyneborg, L., 1977, *Beetles in colour,* (English ed., Vevers, G.). Poole.

Marsham, T., 1802, *Entomologia Britannica*, **1**, Coleoptera. London.

Martyn, T., 1792, *The English Entomologist.* London.

Pic, M., 1891, *Matériaux pour servir à l'étude des Longicornes,* **1**: 13-14. Lyons.

———————, 1903, *ibid.,* **4**(2): 4.

———————, 1908, *ibid.,* **7** (1): 2-6.

———————, 1910, *ibid.,* **7** (2): 21-24. St. Amand.

———————, 1914, *ibid.*, **9**(1): 3-9.

———————, 1945, Notes entomologiques variées et documentaires, *Misc. ent.*, **42** (3): 25-27.

———————, 1946, Etude variétiste de *Strangalia maculata* Poda (Col., Cerambycidae), *ibid.*, **42**(10): 114-120.

———————, 1947, Complément à l'étude de *Strangalia maculata* Poda, *ibid.*, **44**(7): 67-70.

———————, 1947, Variabilité de *Strangalia maculata* Poda. Complément., *ibid.*, **44**(8): 94-96.

Picard, F., 1929, *Faune de France,* **20**, Coléoptères: Cerambycidae. Paris.

Planet, L.-M., 1924, *Histoire naturelle des Longicornes de France.* Paris.

Plavil'shchikov, N. N., 1936, *Fauna URSS . . .*, Cerambycidae, **1**, Moscow Inst. Zool. Acad. Sci. URSS, **2**. Moscow & Leningrad. (Text in Russian).

Reitter, E., 1912, *Fauna Germanica*, Die Käfer des Deutschen Reiches, **4**. Stuttgart.

Rye, E. C. 1866, *British Beetles.* London.

——————— & Fowler, W. W., 1890, *British Beetles.* London.

Shaw, G., 1806, General Zoology 6(1): *Insecta.* London.

Spry, W. & Shuckard, W. E., 1861, *The British Coleoptera delineated.* London.

Stelfox, A. W., 1937, Notes on the distribution in Ireland of the longhorn beetles, *Strangalia aurulenta, S. quadrifasciata* and *S. armata, Irish Nat. J.*, **6**(7): 156-158, 3 figs.

Stephens, J. F., 1829, *A systematic catalogue of British insects.* London.

———————, 1831, Illustrations of British Entomology, *Mandibulata,* **4**. London.

——————— 1839, *A manual of British Coleoptera.* London.

Turton, W., 1806, *A general system of Entomology,* **2**. London.

Villiers, A., 1978, *Faune des Coléoptères de France,* **1**, Cerambycidae. Paris.

Walker, J. J., 1932, The Dale Collection of Coleoptera, *Entomologist's mon. Mag.*, **66**: 106.

Waterhouse, G. R., 1858, *Catalogue of British Coleoptera.* London.

———————, 1861, *Pocket catalogue of British Coleoptera.* London.

Winkler, A., 1929, *Catalogus Coleopterorum regionis palaearcticae,* **10**: 1168. Vienna.

Wood, J. G., 1883, *Common British insects.* London.

Zoologist, The, 1844, **2**: 414. London.

TRIPLAX AENEA SCHALL. (COL.: EROTYLIDAE) IN BUCKS. – Among some beetles recently sent me for checking by Mr. B. Verdcourt was an example of the above species, which he had taken on a birch in Kings Wood, near Heath and Reach, Beds. (31.vii.87). The beetle, however, came from the north-west corner of the wood (comp.4), which is just across the border in Bucks. – a county from which there may well be no previous record of *T. aenea.*

This species has comparatively lately been noted from certain districts south and west of London where in earlier time it was unknown (cf. J. A. Owen, 1981, *Ent. mon. Mag.* **117**: 96). Although Prof. Owen there refers to it as being "widely distributed in Britain and often locally common", it seems always to have been, up to the last two decades or so, very rare in the south-eastern sector as far as records go; and likewise in all the southern seabord counties except Hampshire, the New Forest being a long-known locality. Its apparent spread to, or in, some southern areas is paralleled by that of *Rhizophagus nitidulus* F., which would appear to have begun about the same time. – A. A. ALLEN, 49 Montcalm Road, London SE7.

A 1962 CAPTURE OF DONACIA THALASSINA GERM. (COL.: CHRYSOMELIDAE) IN WILTS. – I have in my collection a specimen of this species labelled "Canal bank/Devizes, Wilts./ 14.vi.62", taken by the late L. H. Woollatt. Thought not a new record for the county, it may be worth publication because the previous one – given in the *Handlist of the Coleoptera of the Marlborough District* (Marlborough College Nat Hist. Report no. 87, 1939: 24) – is without data and may go back as far as the previous century or, at the latest, to the beginning of this one; and because *D. thalassina*, whilst always uncommon, is thought to have become quite rare from about the mid-century. – A. A. ALLEN, 49, Montcalm Road, London SE7.

RECORDS OF MACROLEPIDOPTERA FROM CO. MAYO, IRELAND – I have been unable to find reference to the presence of the following two species in that county: (a) *Lithacodia fasciana* L. Five specimens were attracted to my m.v. light at Pontoon on June 29th 1987. This is particularly interesting as I believe it has hitherto been seen in counties Cork and Kerry only; also in mainland Britain it is of southern distribution, Co. Mayo being further north than this. (b) *Pterapherapteryx sexalata* Retz. One worn specimen was taken at m.v. light at Pontoon, June 29th 1987. E. Baynes (*A Revised Catalogue of Irish Macrolepidoptera*, 1964) states that this moth is scarce and of sporadic distribution in Ireland. B. K. WEST, 36 Briar Road, Dartford, Kent.

SPHAEROPHORIA VIRGATA GOELDLIN DE TIEFENAU (DIPTERA: SYRPHIDAE) IN THE WYRE FOREST, WORCESTERSHIRE, WITH NOTES ON OTHER SPECIES OF *SPHAEROPHORIA* LEPELETIER & SERVILLE AT THIS LOCALITY

By C. W. PLANT*

Amongst several male *Sphaerophoria* species collected at Hawkbatch Valleys in the Wyre Forest, Worcestershire, on 24 August 1986, were three which keyed to *S. virgata* using Stubbs and Falk (1983) [*British Hoverflies* London: BENHS]. My identifications were most kindly confirmed by Steven Falk, to whom I am most grateful for this favour. This is a new and rather interesting locality for this apparently quite rare hoverfly: Previous records are available for Hampshire, Surrey and Berkshire in the south, and for Elgin, Argyllshire, Perthshire, Easterness and Northumberland in the north. Thus, this is not only a new county record, but apparently is also the first away from the two foci for this black and yellow fly.

The flies were captured in three separate sweeps of low growing (about 5 - 10 cms tall) fairly sparse vegetation at the edge of a heathy ride through this Forestry Commission owned part of the Wyre Forest, during one of the few hot sunny days of 1986. Here the ride is about 15 metres wide, the surrounding pines attaining an average height of approximately 4 metres and bordered along the edges of the ride with oak and birch of lesser stature. The ride is bounded by a ditch on one side, which has the outer bank steep and clad with heather and overhanging bracken, amongst other plants. A trickle of water was, and usually is, present in the bottom of the ditch. The flies were captured at a point where there is a slight bend in the ride, and this combined with the height of the trees has created a well lit, warm and sheltered spot in the forest. Whilst it is rarely possible to be precise about details of insects captured by sweeping vegetation, it can certainly be said that the three *S. virgata* were taken from very short vegetation at the edge of the ride, away from the central gravelled area, but certainly not in association with the damp ditch. It would thus appear that, in keeping with existing records from other counties in Britian, *S. virgata* is to be found in heathland type habitats.

Three other species of *Sphaerophoria* are recorded from the Wyre Forest as a whole, and it is interesting that I have taken all three at the same bend of the same ride. By far the commonest member of the genus at this spot in the Forest, (always remembering

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that these comments only apply to males), is *S. batava,* which can be watched feeding on various yellow flower-heads during June, July and August, and is readily swept. There would seem to be relatively little difference between this species and *S. virgata* from the point of view of habitat preference, though in spite of extensive sweeping, coupled with pooting and netting of individual flies, no further examples of *S. virgata* were taken from here or elsewhere in the Forest. *S. batava* was far more numerous here in August than in other months during 1984, 1985 and 1986. One specimen of *batava*, captured on 22 August 1985, had asymmetric genitalia, the lobe on one side being typical, whilst the opposite side had a projection on the inner curve, similar to that found in *S. taeniata*. This latter species is not yet recorded from the Wyre Forest. *S. philanthus* occurs in lesser quantity in this bend of the ride, and appears to have a much earlier peak, being most numerous in June, with only a single example being taken in August. Further, *S. philanthus* is usually found in association with slightly damper areas of the Wyre Forest, and in this particular ride was always taken from the vegetation overhanging the ditch. The normally abundant *S. scripta* also occurs in the ride, but not in such large numbers as it does at other more open sites in the forest, such as the meadow in the Knowles Coppice Reserve. It may be that the vegetation is too sparse at this particular spot, and it is of interest that this short growth should suit the other three species but not this one. Other species of Syrphidae taken on this bend in the ride include *Paragus haemorrhous* (on one occasion only), *Meligramma cincta* (in profusion) and *Sericomyia silentis* (quite common).

Elsewhere in the Wyre Forest as a whole, much of which is, of course, a National Nature Reserve where a permit is needed to collect, *S. batava* and *S. philanthus* are to be found sparingly (?) thoughout Hawkbatch Valleys, where there are rides similar to the one described above. *S. batava* alone (so far) is in selected, and seemingly far less suitable, rides in Withybed Wood and around the top end of the Woodlands Caravan Park in Chamberline Wood, both on the Shropshire side of the boundary. They are far less numerous here however and may just be wanderers from the Hawkbatch area across the road. The larger *S. scripta* occurs throughout the entire Forest in suitable habitat, being particularly abundant in the meadows along the Dowles Brook.

As a footnote, may I be permitted to add that, in co-operation with other workers, I am preparing a list of the Syrphidae of the entire Wyre Forest complex, particularly the National Nature Reserve and SSSI areas. Any additional records, past or present, from others who may have visited the site are welcomed.

WILLIAM B. L. MANLEY COLLECTION OF LEPIDOPTERA

By E. G. HANCOCK*

The Lt. Col. Manley collection of butterflies and moths was bought by Glasgow Museum and Art Gallery from his widow, Margherita, in 1986. Manley died in 1985, aged 85 (Tremewan 1986) having built up a collection of about 60,000 specimens contained in thirty two cabinets and sixty store boxes. It contains, amongst others, all the specimens of his figured in Manley and Allcard (1970). The illustrated examples are clearly marked as such as are the types of the various taxa described by him or by other entomologists from his collection. The most remarkable aspect of this collection is the perfect setting and condition of each insect. This, combined with the extensive coverage from Western Europe, makes it a resource of high quality. Glasgow's offer for the collection was accepted in the face of competition from the Smithsonian Institution, Washington DC, USA.

The collection divides itself into four identifiable sections. Firstly, there is a forty drawer cabinet and twelve store boxes of mainly tropical Lepidoptera. These have their origin in Manley's father's days in the army and the genesis of his interest in collecting can be traced to seeing the specimens sent back from Sierra Leone in 1904 (*in litt.* Margherita Manley to Glasgow Museum, 19 August 1986). The second part forms the bulk of the collection in twenty-one ten drawer Hill's cabinets and thirty six store boxes being the western palaearctic Rhopalocera plus Zygaenidae. The third section in eight Hill's cabinets and nine store boxes is of British moths. These are restricted to mainly British specimens of macro moths and pyralid and tortricoid micros. These last named are particularly developed into the last section, the varieties of *Acleris cristana* and *A. hastiana* occupying two Hill's units and three store boxes. It includes the specimens referred to in his paper on the subject (Manley, 1973).

It is a fine collection and with few exceptions contains the entirety of one man's effort, with the assistance of members of his family. The purchase was a major proportion of the museum's budget for such purposes and was assisted in part by a grant from the Local Museums Purchase Fund. Its acquisition makes the museum a significant resource for the study of european butterflies. Those wishing to study it ideally should make contact with the Keeper of Natural History prior to a visit.

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References

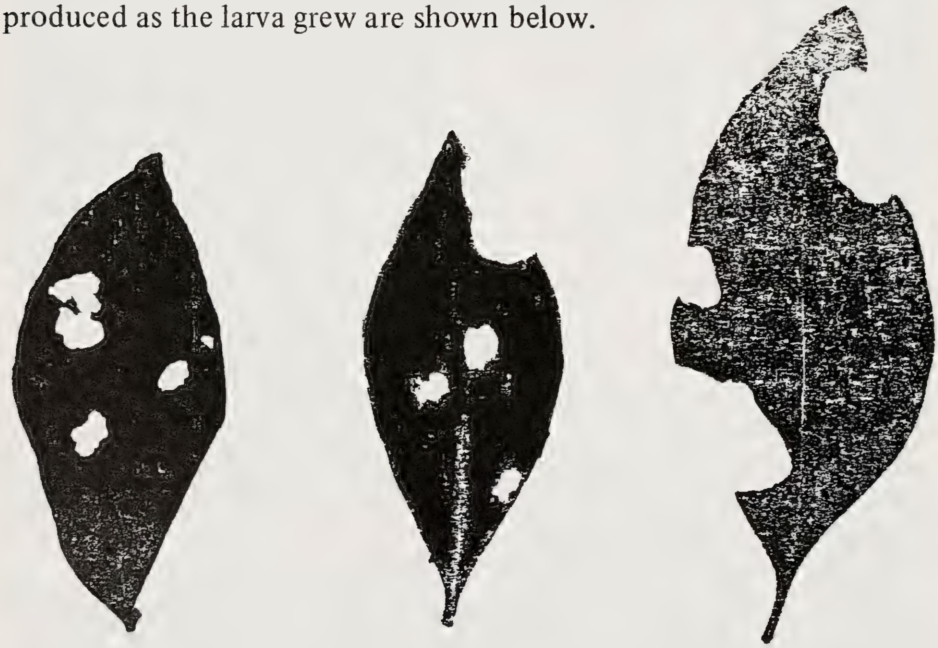
Manley, W. B. L. & Allcard, H. (1970) *A Field Guide to the Butterflies and Burnets of Spain*, 192 pp, 41 plates.

Manley, W. B. L. (1973) A Guide to *Acleris cristana* (D. & S.) (Lep.: Tortricidae) in Britain *Ent. Gazette*, **24**: 89-206.

Tremewan, W. G. (1986) W. B. L. Manley (obituary) *Antenna*, **10**: 68-9.

SAWFLY DAMAGE TO HONEYSUCKLE SIMILAR TO THAT OF THE BROAD-BORDERED BEE HAWKMOTH – On 18.vii. 1987 some colleagues and I were searching for larvae of *Hamearis fuciformis* L., the broad-bordered bee-hawk, in a South Wiltshire locality. A tip that is often given, for example in South's *Moths of the British Isles,* is to look for a leaf of honeysuckle with round holes on each side of the mid-rib. We found a number of leaves matching this description, but no hawkmoth larvae.

Several sawfly larvae were found. One was collected and confined with undamaged honeysuckle leaves, and the feeding patterns produced as the larva grew are shown below.



The larva unfortunately died before it could be identified, but Lorenz and Kraus *(Die larvalsystematik der Blattwespen – Tenthredinoidea und Megalodontoidea* (1957)) list eleven species of sawfly found on honeysuckle and its related cultivars.

I am forced to conclude that the only evidence for the presence of *fuciformis* must be finding the larva itself. PAUL WARING, Nature Conservancy Council, Northminster House, Peterborough PE1 1UA.

BUTTERFLIES ON LA PALMA

By D. E. OWEN*, A. S. SMITH and A. G. SMITH

The island of La Palma, the most westerly of the Canaries, has an area of 730 km^2 and rises to 2413 m at the rim of the Caldera de Taburiente, one of the largest calderas in the world. The north-east is dominated by humid laurel forest, and there are extensive forests of *Pinus canariensis* surrounding the Caldera. The whole landscape is extremely rugged and cut into by deep barrancos. In the south and west it is very arid and there is effectively a desert landscape with a xerophytic flora, many species of which are endemic to the Canary Islands or even to La Palma itself. In the south in particular there has been much recent volcanic activity. Wherever possible the land is cultivated and there is a large variety of species of introduced crops and ornamental palnts.

We visited La Palma between 15 April and 19 April 1986 and recorded 15 species of butterflies, one of them apparently new to the island. We were undoubtedly too early in the season for *Pandoriana pandora* (D. & S.) and *Thymelicus acteon christi* Rebel, which have been recorded in May and June (Chandler 1979), and we did not see *Danaus plexippus* (L.) or *Lampides boeticus* (L.), both of which might have been expected. Guichard (1967) records 20 species of butterflies on La Palma. We found the following:

Pieris brassicae cheiranthi Hubner. Large white. This striking subspecies of *P. brassicae* was seen at several sites, always associated with nasturtium, *Tropaeolum majus*, an introduced South American plant which now appears to be the main larval food-plant of this species in the Canary Islands. A family of about 25 fifth instar larvae was found on nasturtium at Espindola. These were brought back to England and some of the resulting offspring were successfully crossed with English *P. b. brassicae. P. b. cheiranthi* females have a more yellowish upperside hindwing than those from Tenerife. This subspecies is regarded by Kudrna (1973) as a distinct species but in captivity it hybridises freely with *P. b. brassicae.* It would be of considerable interest to know if *P. b. cheiranthi* utilises the native Cruciferae or related plants or whether it has completely switched to the alien nasturtium.

Artogeia rapae (L.). Small white. Widespread in cultivation; rare in natural habitats. A single larva was found on nasturtium.

Pontia daplidice (L.). Bath white. Frequent in dry places, especially on the west side of the island.

Catopsilia florella Fabricius. African migrant. One flying

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around a *Cassia didymobotrya* bush in a garden at El Paso. This bush is the larval food-plant on Tenerife and La Gomera. *C. florella* is an extremely abundant and migratory butterfly throughout Africa south of the Sahara and it now seems well-established in the Canaries, being first recorded on Tenerife in 1964 and La Gomera in 1974 (Higgins and Riley 1983). Out record is apparently the first for La Palma.

Colias croceus (Geoffroy). Clouded yellow. Seen in most open places, especially at roadside flowers. One form *helice* noted.

Gonepteryx cleopatra palmae Stamm. Cleopatra. Two males and one female of this endemic subspecies were noted. They were rather worn, suggesting that they had hibernated. This, too, has been regarded as a distinct species confined to La Palma (Kudrna 1975).

Lycaena phlaeas phlaeas (L.). Small copper. Common, even at high elevations. All specimens closely examined were brightly coloured and showed no signs of the dark grey suffusion characteristic of certain warm localities.

Cyclyrius webbianus Brullé. Canary blue. Freshly emerged in all open areas at low elevations. On Tenerife and La Gomera this Canary Island endemic is more abundant later in the season.

Zizeeria knysna knysna Trimen. African grass blue. One seen on the east side of the island. This species is abundant later in the season on Tenerife.

Aricia agestis cramera Eschscholtz. Brown argus. A few by the roadside on the west side of the island. This subspecies has also been regarded as a distinct species on the basis of the structure of the male genitalia (Higgins and Riley 1983).

Vanessa indica calliroe Hbn. Indian red admiral. Also known as *V. i. vulcania* Godart, this butterfly was seen in small numbers at many locaitions. Others seen were not certainly distinguished from *V. atalanta* (L.) which, however, was not positively identified on La Palma, although known to occur there.

Cynthia cardui (L.). Painted lady. Two were seen on the east side of the island, and a fourth instar larva was found feeding on an unidentified thistle at Los Sauces.

Maniola jurtina hispulla Esper. Meadow brown. Emerging in large numbers at lower elevations but evidently not yet emerged at higher elevations. The best site was flat, grassy countrysurrounding the old and abandoned airport. Meadow browns on La Palma are exceptionally large and brightly coloured, especially in the females. Many showed signs of attacks by lizards and birds, as illustrated in Fig. 1.

Pararge xiphioides Staudinger. Canary speckled wood. Not common. Well scattered around bushes and a few in pines on the slopes of the Caldera. Also seen in gardens and banana plantations and in

Fig. 1 Specimens of *Maniola jurtina* attacked and missed by lizards and birds. *Left.* A female showing rounded, symmetrical bites on all four wings, presumably inflicted by a lizard while the butterfly was at rest with the closed wings held well down. *Centre.* A male showing ragged, symmetrical tears on all four wings inflicted by a lizard or bird while the butterfly was at rest. *Right.* A male showing conspicuous beak marks on the fore- and hindwings, presumably made by a warbler or other small bird. The symmetrical bites in the hindwings could have been made by a lizard.

the laurel forest at Los Tilos. The best single site was a rubbish dump in the town of Santa Cruz de La Palma where seven were seen together. At Los Tilos, 17 eggs were found on the grass, *Brachypodium sylvaticum*, growing in shady laurel forest. Four of these eggs were on one blade of grass, an unusual find, two on one blade, and the remainder one to a blade. Ten first to third instar larvae were also found on *B. sylvaticum*, all singly.

Danaus chrysippus (L.) African queen. A worn male near El Time. The specimen has some white in the hindwings and so approaches the *alcippus* form of this polymorphic danaid. Form *alcippus* is the only colour form found in tropical West Africa.

Acknowledgement

We thank Derek Whiteley for drawing Fig. 1.

References

Chandler, P. J. 1979. Flies, bees and butterflies on La Palma, Canary Islands in 1976. *Entomologist's Rec. J. Var.* **91**: 103-107, 117-121.

Guichard, K. M. 1967. Butterflies of the Canary Islands. *Entomologist* **100**: 293-299.

Higgins, L. G. and Riley, N. D. 1983. *A field guide to the butterflies of Britain and Europe.* Collins, London.

Kudrna, O. 1973. On the status of *Pieris cheiranthi* Hübner. *Entomologist's Gaz.* **24**: 299-304.

Kudrna, O. 1975. A revision of the genus *Gonepteryx* Leach (Lep., Pieridae). *Entomologist's Gaz.* **26**: 3-37.

COPRIS LUNARIS L. (COL.: SCARABAEIDAE) ON GUERNSEY – Mr. M. D. Bryan (*Ent. Rec.* **99**:58) states that he is unable to find any previous references to the occurrence, in Guersey, of this beetle.

The species was first listed in the *Transactions of La Societe Guernesiaise* by W. A. Luff in 1893. *Lunaris* was also mentioned by J. R. Tomlin who published a list of the Coleoptera recorded in the Bailiwick of Guernsey in 1921 (*Entomologist's mon. Mag.* **57**: 13 – 14). In 1966 a full list of the Coleoptera of the Bailiwick was published by H. R. Last (*Proc.Trans.S.Lond.ent.nat.Hist.Soc.* 1966, 101-115).

Very little work has been done on our local Coleoptera in recent times, but a new list is in preparation, and any records would be welcome. R. A. AUSTIN, La Societe Guernesiaise, Maymyo, Les Amballes, St. Peter Port, Guernsey.

NOTES ON *BERYTINUS MONTIVAGUS* (MEYER) AND *METATROPIS RUFESCENS* (HERRICH-SCHÄFFER) (HEMIPTERA) IN IRELAND

By J. P. O'CONNOR*, M. A. O'CONNOR* and
M. de COURCY WILLIAMS**

Berytinus montivagus (Meyer)

On 23 May 1985, while collecting insects on a "green road" near Corker Pass in the Burren, Co. Clare (Irish grid reference M 308107), the O'Connors swept a male of *B. montivagus* from vegetation growing beside this track which passes over limestone pavement typical of the region. The specimen was determined using Southwood and Leston (1959) and Pericart (1976). We have been unable to trace any previous Irish records of the species. Its discovery prompted a re-examination by J. P. O'C. of the *Berytinus* material preserved in the National Museum and this yielded a specimen taken in the Cork district during May 1902 by J. N. Halbert. It was misdetermined as a macropterous form of *B. signoreti* (Fieber) and is thus cited in Halbert (1935). In Great Britain, *B. montivagus* has been recorded from many parts of England but it is rare in the north and midlands. It has also been obtained in Wales (Southwood and Leston, 1959). Since its foodplant, black medick (*Medicago lupulina* L.) is common in Ireland (Webb, 1977), it is inexplicable that the bug has been taken so rarely in this country. The species is a central and southern European one (Southwood and Leston, 1959). Temperatures are very equable in the Burren, both the annual and diurnal variation being remarkably small. The mean temperature of the air throughout the year is just under 10°C for most of the region – higher than in all parts of the British Isles except the southernmost fifth of Ireland, west and south Wales, and England south of the latitude of Cambridge. There is only a small difference between the coldest and the warmest month and *M. lupulina* is abundant on the limestone (Webb and Scannell, 1983). The wide availability of the foodplant combined with the mild climate characteristic of the Burren may therefore account for the presence of *B. montivagus* there. Unfortunately, the older specimen may have been taken anywhere in Co. Cork which is a large area. However, parts of it have also a mild climate.

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Metatropis rufescens (Herrich-Schäffer)

There are few published Irish records of this attractive bug. Halbert (1935) spent many years collecting Hemiptera prior to compiling his list but he never obtained the species. It is certainly not an insect which could have been overlooked by him.The first Irish individual was taken by the Rev. P. O'Kelly on 5 June 1938 near Moycullen in West Galway (Stelfox, 1938). Subsequently in 1981, Kirby, 1983) swept four final instar nymphs from a small patch of enchanter's nightshade (*Circaea lutetiana* L.) in woods near Muckross Lake, Killarney, Co. Kerry. In view of this paucity of Irish records, it is surprising that the authors have recently taken *M. rufescens* at ten new sites, some of which are widely separated. The new records are:– CORK: Glengarriff Forest (V 907575), 6 July 1985, ♂♂ ♀♀abundant on *C. lutetiana* beside a public road (J.P.O'C., M.A.O'C.); Glengarriff Forest (V 920565), 7 July 1985, ♂♂♀♀ abundant on *C. lutetiana* beside a public road (J.P.O'C, M.A.O'C.). Specimens were observed copulating and flying actively from plant to plant; CLARE: Glen of Clab (M 290020), 14 July 1984, ♀ taken in *Fraxinus* woods growing on limestone (M.deC.W.); Pollavaun (M 285020), 11 July 1984, ♂ taken in *Fraxinus/Salix* wood on limestone (M.deC.W.); near Ennis (R 292796), 30 May 1984, 2 ♂♂ taken on *C. lutetiana* in a mixed wood with *Corylus* on limestone (J.P.O'C.); KILDARE: Donadee Forest (N 832328), 11 September 1985, ♀ swept from vegetation beside a small lake (J.P.O'C.); LEITRIM: Clooncoe (N 1091), 28 May 1986, ♂ swept from ground vegetation in old *Betula* wood by a lake (M.deC.W.); MEATH: Sommerville Wood (N 9965), 13 September 1978, one final instar nymph swept in a clearing in a mixed deciduous wood containing *C. lutetiana* (M.deC.W.); OFFALY: Charleville Wood (N 315220), 4 July 1984, ♂♂ ♀♀abundant in an old *Quercus* forest (M.deC.W.); WEXFORD: Oaklands Forest (S 715255), 10 June 1986, ♀ swept from roadside vegetation in mixed wood (J.P.O'C.). All the Irish records are summarised (Fig. 1) and it appears that *M. rufescens* may be a recent arrival in this country, and that it is actively extending its range here. In this context, it is interesting to note that it has also spread in Great Britain and continental Europe (Southwood and Leston, 1959).

Voucher specimens of *B. montivagus* and *M. rufescens* have been deposited in the National Museum of Ireland, and of the latter species in the British Museum (Natural History).

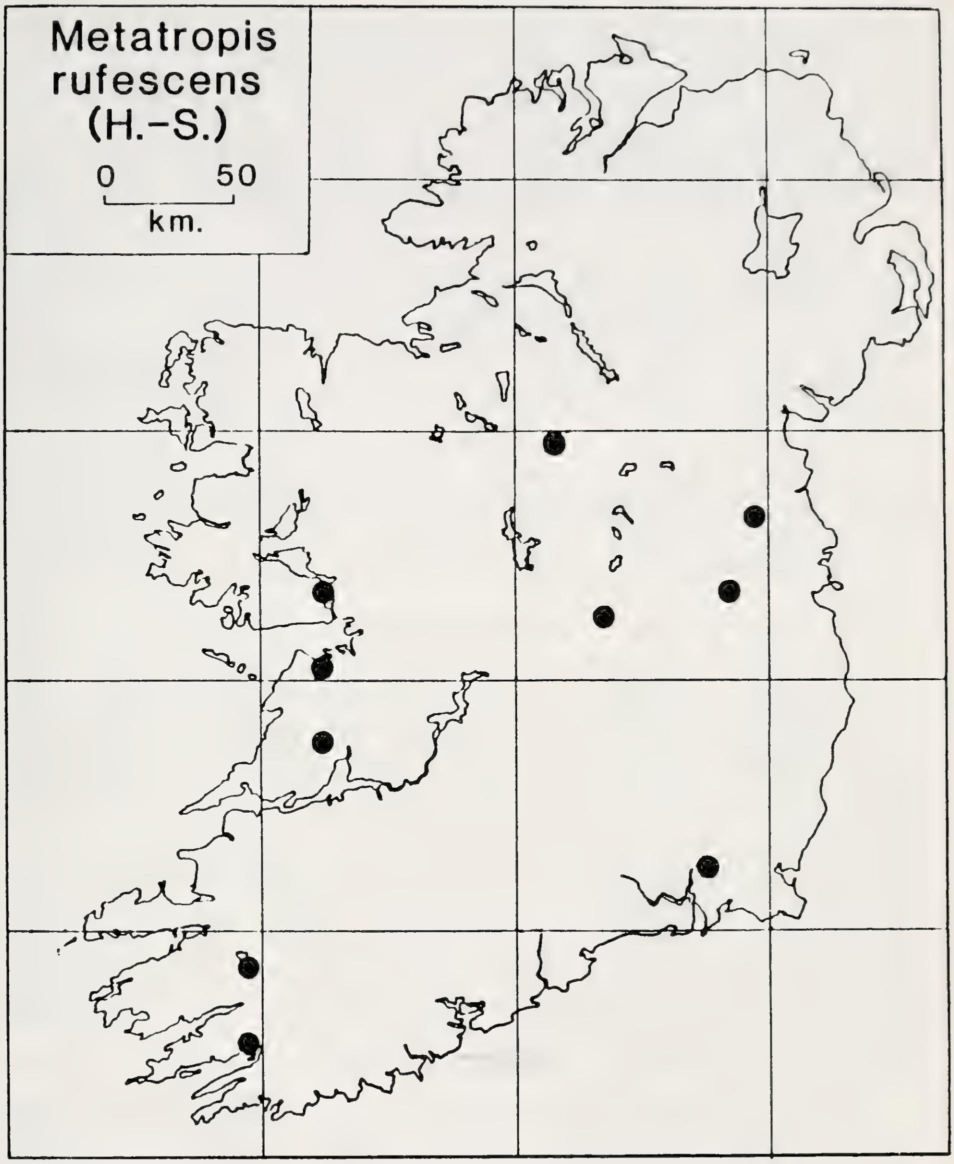

Fig.1. The distribution of *Metatropis rufescens* (Herrich-Schäffer) in Ireland.

Acknowledgement

We are most grateful to W. R. Dolling, British Museum (Natural History), for confirming our determinations and for his helpful comments on the manuscript.

References

Halbert, J. N. 1935. A list of the Irish Hemiptera (Heteroptera and Cicadina). *Proc. R. Ir. Acad.* 42B: 211-318.

Kirby, P. 1983. Heteroptera recorded from the Killarney area, 28 August – 7 September 1981. *Ir. Nat. J.* **21**: 45-48.

Pericart, J. 1976. Introduction a une révision des Berytinidae ouest-paléarctiques (Hemiptera). *Ann.Soc.ent.Fr.(N.S.).* **12**: 355-382.

Southwood, T. R. E. and Leston, D. 1959. *Land and water bugs of British Isles.* Warne, London.

Stelfox, A. W. 1938. *Metatropis rufescens* H.-S.: a plant-bug new to Ireland. *Ir. Nat. J.* **7**: 88.

Webb, D. A. 1977. *An Irish flora*. 6th edition. Dundalgan Press, Dundalk.

Webb, D. A. and Scannell, M. J. P. 1983. *Flora of Connemara and the Burren.* Royal Dublin Society and Cambridge University Press, Cambridge.

HORISME TERSATA D. & S. (LEP.: GEOMETRIDAE), THE FERN CARPET, IN SHROPSHIRE – I found a single male of this species at rest on a shop window in Bridgnorth, south-east Shropshire, on 30.vii.1987. It has not previously been recorded in the county.

The foodplant, traveller's-joy (*Clematis vitalba*), is very common along many parts of the Shropshire portion of the Severn valley and, like *Eupithecia haworthiata* Doubl. (Haworht's pug) which feeds on the same plant, *tersata* is probably well established in these areas. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

EPITRIX PUBESCENS KOCH (COL.: CHRYSOMELIDAE) IN WEST KENT – This very local flea-beetle, known from a number of localities in East Kent, Essex, Suffolk etc., is more often recorded than formerly, but, it seems, West Kent still lacks a record. I found it sparingly on a straggling mass of woody nightshade (*Solanum dulcamara*), where it was greatly outnumbered by the common *Psylliodes affinis* Payk., in a lane leading to the saltmarshes at Crayford Creek near Dartford, on 13.vii.84 and subsequently.

In recording *E. pubescens* from W. Norfolk (*Ent. Rec.* **96**: 36-7) I inadvertently wrote as though *Solanum nigrum* were its sole foodplant; or at least my words could have been so construed. This of course is not the case, the beetle living equally on both species of nightshade. – A. A. ALLEN, 49 Montcalm Road, London, SE7.

A QUEST FOR *MACULINEA* IN WESTERN FRANCE, 1986

By S. L. MEREDITH*

For some years I have been inspecting sites in Britain that might support the large blue butterfly (*Maculinea arion* L.). Though my quest was once successful, though due to information rather than my own searches, much of my effort has concentrated in the Cotswolds, where in terms of seeing the insect I have drawn a total blank, although I have found some very promising sites including one that holds one of the best marsh fritillary (*Eurodryas aurinia* Rott.) colonies that I have seen, numbering probably a few thousand over quite a large area. The Cotswold *arion,* along with the old Barnwell Wold insects, was always regarded as being of a more 'iron blue' than those from the South-West and from pictures, there does seem to be a bit more purple in the wings and the spots on the upper hind wing, according to the illustration in E. B. Ford's *Butterflies*, are more pronounced and ringed. A. D. A. Russwurm in his *Aberrations of British Butterflies,* states that the Cotsworld race resembles that from Brittany.

Although *arion* is now declared to be extinct in Brittany and has retreated from many northern haunts, I though there might be some merit in at least looking at some of the old sites as this seemed to present the only possiblity, faint as it was, of seeing the 'Cotswold' race. The excellent section on (*Lycaena*) *arion* in Tutt's *British Butterflies* gives a full account of then known European localities including northern France but not much on the times of appearance. The only reference that I could find was July 14, 1899 in the Petit Val, Val André (Turner). Though I have the *Record* from 1957, no one seems to have written about Brittany so, as I had some leave to fit in, I decided, almost on the spur of the moment to book my place on the Dover-Calais ferry for July 5th, returning on 13th.

The first day I drove as far as Caen but on the second day, Sunday, 6th, unfortunately, due to a presumed short circuit, the wiring under the car bonnet was mysteriously found to be burnt out, so I had to spend two days in Avranches. I could easily have been marooned in less attractive or interesting surroundings as there was a splendid view of Mont-Saint-Michel and quite by chance came across a stone plaque on the ground, with the short remains of a column alongside, where King Henry II paid penance in front of the Pope for his part in the murder of Thomas A'Becket. That is all that is left of the cathedral that once stood there.

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However, I did take a walk from Ponts, on the edge of the town to St. Brice which was almost totally devoid of entomological interest. The road side had plenty of meadow browns (*Maniola jurtina* L.) , two speckled woods (*Parage aegeria* L.) tending towards the southern continental form with rich yellow replacing the cream of British specimens. There were also some large skippers (*Ochlodes venata* Bremer and Grey). An area of woodland lined with masses of brambles looked promising but all it produced were dozens more *jurtina*, some more *venata*, one white admiral (*Ladoga camilla* L.) and a fresh painted lady (*Vanessa cardui* L.). Only when I came to a flowery meadow with a stream running through it did anything more exciting appear in the form of a good colony of marbled whites (*Melanargia galathea* L.) and a single swallowtail (*Papilio machaon* L.) together with plenty of common blues (*Polyommatus icarus* Rott.). Almost back where I started near Ponts, a small woodland ride produced small and green-veined whites (*Pierus rapae* L. and *P. napi* L.), one red admiral (*Vanessa atalanta* L.) a dwarf comma (*Polygonia c-album* L.) and a humming-bird hawk moth (*Macroglossum stellatarum* L.).

At last on Tuesday afternoon, 8th July, my car was ready and I headed for the area of the old sites. The first call was to be in the Department of Cotes du Nord at Val André where Turner had seen *arion* on July 14th, 1899. Based upon the description 'in one corner of an orchard of the Petit Val (Cotes du Nord) on a bank overgrown with broom and bramble, with *Melanargia galathea, Epinephile tithonus, E. janira* and swarms of other things', it was inconceivable that such a place would remain nearly a hundred years later. Val André is now a popular and growing seaside resort and even a call at the tourist office failed to reveal any clue as to the location of the Petit Val. The nearest I came to it (and perhaps in reality) was an antiques shopping complex carrying that name. The 1899 record hardly justified more time so I made for the two sites given in Finisterre, 'south and west of the canton of Pont l'Abbé, abundant on the heaths of Kermenhir and Loctudy (Picquenard)'. Despite searching various maps before setting out, I could not find Kermenhir. However, fortuitously while looking for a hotel in the attractive city of Quimper, I came across a large scale map of the area in a window and Kermenhir was shown as being roughly half-way along the D2 between Pont l'Abbé and Loctudy.

Next day, 9th, I set off for Kermenhir, not really imagining from my observations of the intensification of agriculture and land use in northern France in general, that there would be much chance of seeing the original habitat. My fears were fully realised as the heath has virtually disappeared, mainly due to agriculture. The only fragment that bore any possible relation to the old heath was an old quarry, the sides of which were almost totally covered by

gorse. Clearly it was a waste of time to stay but I did see a single *L. camilla* and surprising for the late date, a male orange tip (*Anthocharis cardamines* L.). At Loctudy there was no indication of where the 'heath' might be so I drove around in a fairly haphazard way. The area has been turned over to holiday bungalows and agriculture and it was soon clear that there was no heath left. Its' location could be guessed from the odd clump of Scotch Pines but apart from tiny, overgrown fragments, all had disappeared. In a state of some despondency I made the mistake of deciding to go further south. Decisions in my experience, made in an emotional state, are always bad ones and this was no exception. Though I had noted that *arion* had been recorded at Menez Hom, my knowledge of Brittany was insufficient to realise that it was within a national park comprising a range of low hills and therefore potentially more promising.

However, I was driven by the description in Tutt (by Oberthur) of the site at Monterfil, west of Rennes, 'a "lande", a kind of rough heathland, no part of which is level, yet whose acclivities and depressions could not be described except in a toy or fairyland sense, as hills and valleys, and where the short vegetation is constantly interrupted by outcrops of stone'. While having a welcome tea at an unexpected patisserie at Plélan-le-Grand I went through in my mind what might have happened to this habitat. In this place it seems to have been present in some years and absent in others. Someone using the initials GW inserted an item in parenthesis with an optimistic comment at the end, 'I do not think that there is in any way a question of cultivation either'. I am afraid that I could not be as optimistic and village spread and agriculture seemed likely. My worst fears were fully realised as upon arriving at Monterfil, Oberthur's site could not be found despite driving out of the village in all directions. However, I did find some outcrops of rock that had become features in new gardens and it soon became clear that the habitat has been absorbed into greater Monterfil as well as agricultural intensification. Apart from the odd few rocks in gardens and overgrown fragments in fields, Oberthur's site had disappeared with barely a trace. As I drove in I noticed what looked like a war memorial standing high up on an area of heathland and eventually found the path to it. Sadly, although it was covered with heather, there was no sign of thyme or marjoram. Ironically, I could just make out the name 'Oberthur' on the lichen encrusted stone which could have been, though doubtless was not, a fitting memorial to an entomologist who knew it in happier times. I am glad he never saw it as it is now.

On the way out of Monterfil, perhaps a couple of kilometres away, I passed an area of heath that looked worth examining. A small butterfly with flight that was unfamiliar turned out to be the large chequered skipper (*Heteropterous morpheus* Pallas) in an

unusual habitat according to 'Higgins and Riley', which states that shady areas or light woodland are normal. Its' curious hopping flight in which it seems to go on forever without settling is unusual for the Hesperids. Also present was the small heath (*Coenonympha pamphilus* L.) pearly heath (*C. arcania* L.) marbled white (*Melanargia galathea* L.) and silver-studded blue (*Plebejus argus* L.) in a typical setting. Sadly this was not part of the lost Monterfil habitat and not suitable for *arion*. In the Department of Ille-et-Vilaine, apart from Monterfil, there were two areas to look at, Laille and Bourg-des-Comptes along the R. Vilaine, south of Rennes. I had no clue where to look and again, the level of agricultural development seemed to indicate that I would probably be wasting my time in this rather flat area, so apart from driving through, I did not linger. Had I referred to the 1:10,000 topographical map, I might have spent a little longer as it shows some land sloping down to the river, apparantly clothed in orchards. Remembering Turner's experience in the Petit Val, it may just occur there and a further visit seems desirable.

I had decided to look at the nearby Loire Valley and of the four places referred to in Tutt under the Department of Maine-et-Loire, the first, Chaloché, could not be found on the map. After a considerable search, the nearest in spelling was Challoché, which appeared to be a chateau, a few km. NE of Angers. This seemed at the time to be a bit too tenuous so, perhaps mistakenly, I did not visit it. The next place that looked vaguely promising was Milly, within an extensive forested area, west of Saumur but on the way there, on 10th July, I called at Pignerolle, (with an 's' in Tutt), a chateau open to visitors, just beyond the town on its' eastern edge. The immediate environs looked useless but I did look at a piece of unused farmland alongside the main road. Here were dozens of *M. galathea*, some *M. jurtina* and one brown argus (*Aricia agestis* D. & S.). I decided to go to Milly without delay but where should I concentrate my efforts, the area around the village or the Forest of Milly? The latter somehow seemed more promising. While driving around, I came across a small rectangular and artificial clearing that looked worth exploring. This proved to be so as it produced a colony of the large tortoiseshell (*Nymphalis polychloros* L.) and as this was the first time that I had seen this fine butterfly in the wild, I spent a happy morning watching their antics. An oak tree with sap running from a wound about a foot above ground and on the far side of the tree from the clearing was most attractive to two individuals which almost disappeared between the trunk and the bark, although they were very alert and I could not obtain a photograph of the event. Even when the sun had moved to the other side of the clearing, one butterfly still maintianed its' interest there. Also present were the heath fritillary (*Melicta athalia* Rott.) abundant, two purple emperors (*Apatura iris* L.) which were sharing an oak tree with

three or four *polychloros* and shared the same habit of spiralling round the upper trunk doubtless looking for exuding sap. The sloe hairstreak (*Nordmannia acaciae* Fab.) was very common on bramble blossoms and *H. morpheus* was behaving in its' usual way in the grass. There was one single brief visit from the great banded grayling (*Brintesia circe* Fab.). I drove around other parts of the forest and also noted the silver-washed fritillary (*Argynnis paphia* L.). The only evidence of the foodplant was of thyme growing over the gravel at the sides of the roads and this did not seem to be altogether suitable for *arion.*

The last place named in the Department was le Vaudelnay, where Delahaye, who had provided the information for the other habitats in the area, described it as common. On the Michelin yellow series I could only find Vaudelnay, which I assumed was the same place. As with the places south of Rennes, having no other information, I merely drove around this now unlikely looking area.

This was now time for a decision. It was, it seemed to me, to be getting late in the season to see *arion* so far south on low-lying ground, even had I unbeknown, stumbled across a habitat following a more intensive search in the largely unexplored areas. After consulting 'Higgins and Riley' and 'Higgins and Hargreaves', I decided to try a totally different area that again, I did not recall reading about in the *Record*. The distribution maps from the above books show the area south of Bordeaux, les Landes, as somewhere possibly for the scarce large blue (*Maculinea teleius* Berg.) and the large copper (*Lycaena dispar* Haw). As it seems to be an area not often visited by entomologists, I decided to explore it. The area is a vast coniferous forest, lens shaped, some 220km. north to south and about 130 kms at the widest. Before long I was on the A1O motorway heading south. I spent the night at Parentis-en-Born in the heart of les Landes. With the aid of the large scale topographical maps, I could work out a few places that had to be visited on a very tight schedule the next day. Upon leaving Parentis, a small area of heath was examined and produced a single *M. athalia*.

A sight rarely encountered any more in Britain, was of someone walking along the road carrying a butterfly net. At last, I thought, here must be someone who can put me in the right direction. He turned out to be M. Moulin from Lille on holiday. He did not know the area and after some pleasantries we went our separate ways.

The first planned port of call was the periphery of Lac Blanc near Tosse, a few km. north of Bayonne. An area of dry bog produced a single woodland brown (*Lopinga achine* Scop.) and a single long-tailed blue (*Lampides boeticus* L.). Another nearby and outwardly promising similar area produced a single short-tailed blue

(*Everes argiades* Pallas) and these turned up in small numbers in other places in the vicinity.

The next place I decided to visit was an isolated area of bog some way beyond the town of Mont-de-Marsin and near the village of Vielle-Soubiran. Approaching the village, I stopped at a flowery spot by the side of the road in the forest but *H. morpheus* was all that was about. Unfortunately, the area seems to have changed since my map was produced and I did not locate the area in question though I did come across a much smaller bog. There were few butterflies, though there were a few dryads, (*Minois dryas* Scopoli) and *C. pamphilus*. A large white banded grayling was seen but time was pressing and I did not have time to pursue it for identification.

The next place to visit was another area of bog as indicated on the map between the villages of Sore and St. Symphoriem. By now I was beginning to regard the whole area as very unpromising. It seemed to be undergoing considerable change by drainage and forestry operations and there seemed to be very little undisturbed wetland apart from the areas near lakes. The above mentioned bog seemed to have disappeared into forestry and was certainly not identifiable. The last area that I was determined to see was the Marais de Talaris, in the north of the region. This was a nature reserve between the Lakes d'Hourtin – Carcans and Etang de Lacanan. The long straight roads through the vast conifer forest seemed endless but I did eventually arrive and parked near the Canal de Jonction which connects the lakes and traverses the Marais. There is a public footpath on both sides and I walked for about half a mile down the Western one but it soon became clear that this area was useless also, resembling an area of the Norfolk Broads reverting to scrub or carr.

Although I had only scratched the surface of this vast area, the extent of drainage and forestry operations seemed to rule out much chance of my main quarries occurring there. I could now make for Bordeaux and get onto the motorway heading north for the obligatory inspection of Menez Hom. The national park consists of a few low, flat topped hills, largely wooded around the base. A road leads up to the top of Menez Hom and is much used by motorists driving up to admire the view. The road passes through heathland and at the top there are more exposed rocks and a wider range of wild flowers. However, there was no sign of thyme or marjoram. The hillside gave the impression of having been burnt, the smooth covering of heather looking rather recent but this is pure guesswork. Clearly it was quite unsuitable for *arion*. I did examine an adjoining lower hill which seemed from the road to have a slightly greater variety of flowers. Again, although I undertook a fairly thorough search, there was no sign of the foodplants.

Based upon these observations, it was hard to imagine that the area once supported the large blue and I was forced to speculate that there had perhaps been a mistaken identity.

This concluded the *arion* search and though unsuccessful, I was glad to have satisfied myself as to the current state of ex-habitats. The search was not thorough enough in the Rennes or Saumur areas and I would like to explore them in greater depth at the right season.

On the return journey I had decided to look at the large area of forest in the Compiègne area but unfortunately the last day, Sunday, July 13th was cloudy and it seemed a waste of time to even stop. I just made the ferry on time, sadder but wiser though resolved to put Brittany more thoroughly to the test next time.

My thanks are due to Mr. Nicholas Derry for supplying the background information.

Notes and Observations

A NOTE ON THE LIFE HISTORY OF PHYLLODECTA POLARIS SCHNEIDER (COL.: CHRYSOMELIDAE). – Sometime ago, my friend Dr. M. Cox told me that the larva of the montane chrysomelid *P. polaris* had never been formally described and suggested that I looked for it on its presumed food plant *Salix herbacea* L. whenever I had an opportunity. One such arose on 5.viii.1987 when climbing with members of my family on Beinn Eighe in Wester Ross, the site at which the beetle was first found in Britain (Morris, M.G. 1970 *Entomologist's mon. Mag.* **106**, 48). Near the summit, at an altitude of about 950m, there was a large patch of the *Salix* growing among the moss *Racomitrium lanuqinosum* (Hedw) Brid. We collected some of this moss mixed with *Salix*, sieved it and put the sievings in a "Winkler" extractor.

During the subsequent 48 hr, three small black chrysomelid larvae, ranging in length from 2 - 3mm appeared in the extractor. They were given fresh leaves of the *Salix* which were readily eaten. As was described by Larsson & Gigja. (1959 *The Zoology of Iceland* **3**, pt 46a Coleoptera 1 Synopsis p 185), the larvae chewed usually from the underside without penetrating the leaf and avoiding the ribs, leaving a transparent, whole or part leaf "skeleton". If a leaf was placed in the container with the upper surface downwards, the larvae ate into what was naturally the upper surface, suggesting that gravity determined which surface was chewed rather than the surface structure of the leaf.

On 15.viii.1987, one of the larvae, by then about 5mm in length, pupated. The cream coloured pupa was discovered lying on the bottom of the container. The remaining two larvae, similarly

4 – 5mm long, were promptly preserved in 70% alcohol and subsequently given to Dr. Cox who will be describing them in due course. An adult beetle emerged from the pupa after six days.

This is apparently the first time larvae of *P. polaris* have been found in Britain. The finding identifies positively *Salix herbacea* as a food plant here, confirming a suspicion from the habits of the beetle in Iceland (Larsson & Gigja, *(loc. cit.)*) and from the noted association of adults with this plant in Britain and Scandinavia.

As far as timing goes, we found on a previous occasion active adults at a similar site at the end of May (Owen, J. A. 1983 *Entomologist's mon. Mag.* **119**, 191) but no attempt was made that time to look for eggs or larvae. Larsson & Gigja *(loc. cit.)* recorded eggs found (in Iceland) on July 14th, larvae in July and August and a pupa on August 16th. Though adults in Britain are apparently active from early summer onwards, the current finding suggests that, as in Iceland, they do not oviposit until July. The very short pupal stage noted in the one example here may have been a consequence of keeping the pupa at room temperature at Epsom, Surrey where, presumably, the mean air temperature was higher than that in the natural habitat of the beetle on a Scottish mountain. However, Larrson & Gigja state that the pupal period is normally short. All the evidence suggests that the beetle overwintered as an adult.

I thank Mr. Ray Collier, Regional Chief Warden, Nature Conservancy Council, North West Scotland for giving approval for this study and Dr. M. Cox for reading the draft manuscript and making helpful comments. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

EUPITHECIA INTRICATA (ZETT.), (LEP.: GEOMETRIDAE) – NEW TO CHESHIRE. – We are operating a recording scheme in the county for the macrolepidoptera and I receive records from at least 30 lepidopterists from widely spaced localities. Naturally there are "doubtful" identities from time to time and many specimens are brought to me for confirmation (in various states of repair!) and it will be no surprise that a good proportion of these are "Pugs"!

In late June 1987 Alan Roberts, who records at his home in Knutsford (SJ77) and also in the National Nature Reserve at Rostherne (SJ78), brought to me a large pale brown "pug" which I did not recognise; it was still alive and a female from which eggs were readily obtained but I could not get the larvae to feed on any of the usual pug food. Sadly I did not think of trying Cypress. At this stage Mr. Roberts brought me a second specimen, obviously the same species but this time a dead male. I made a slide of the genitalia and also one of a specimen of *Eupithecia intricata millieraria* (Wnuk.) collected many years ago near Aviemore. They were clearly the same species and the fact that I have no specimens of

E. intricata arceuthata (Freyer) probably explains why I did not recognise them in the first place.

It seems only a few years since we welcomed the arrival of *Thera juniperata* (L.) in Cheshire and attributed it to the increased planting of ornamental conifers in parks and gardens; it seems that the arrival of *E. intricata* is likely to have a similar explanation and we are now looking foreward to the arrival of *Eupithecia phoeniceata* (Ramb.) and perhaps even *Lithophane leautieri* (Boisd.) C. I. RUTHERFORD, Longridge, Macclesfield Road, Alderley Edge, Cheshire, SK9 7BL.

METOECUS PARADOXUS L. (COL.: RHIPIPHORIDAE) IN N. W. KENT. – In a note in 1984, *Ent. Rec.* **96**: 184, I drew attention to the apparent paucity of records of this curious beetle from Kent, compared, for instance, with Surrey; and gave one from Bexleyheath as notable in this respect, as also from its proximity to London. I now report a more recent occurrence in suburban Kent. On a chance meeting Mr. P. W. Barrett, a keen observer of nature, described to me a beetle he had seen that morning (24.viii.86) in his garden between Shooters Hill and Plumstead, resting in the sunshine on a tank, and which he had been much struck by. From his description, which stressed feathery antennae, I was fully satisfied that it must have been a male *Metoecus*. Almost certainly the species is generally distributed in southern England, yet because of its habits not often seen except when suitable wasp nests are dug up. – A. A. ALLEN, 49 Montcalm Road, London, SE7.

HADENA COMPTA D. & S. (LEP.: NOCTUIDAE) IN HAMPSHIRE – I would like to record the capture of a fresh specimen of the varied coronet moth at Martin Down, Hampshire at m.v. light on 5.vii.1987. Neither Goater *The butterflies and moths of Hampshire and the Isle of Wight,* nor Bretherton in Heath's *MBGBI* **9** record this insect from Hampshire. R. R. COOK, 11 Greensome Drive, Fairways, Ferndown, Dorset.

A CASE OF INTERGENERIC COPULATION BETWEEN LYCAENID BUTTERFLIES – During a field trip to Mt. Iti, central Greece, on 11th June, 1987, a copulating pair of Lycaenid butterflies was captured, which, upon closer inspection and to my great surprise, turned out to be a male *Ultraaricia anteros* Freyer and a female *Cyaniris semiargus* Rottemburg.

The *anteros* were very numerous in that area and consisted exclusively of fresh males, the females apparently not having yet emerged, thus suggesting a case of protandry. Perhaps this total absence of female *anteros* is what triggered this abnormal union. JOHN G. COUTSIS, 4 Glykonos Street, Athens 10675, Greece.

ACRONICTA RUMICIS L. (LEP.: NOCTUIDAE) – LARVAL FOODPLANT IN IRELAND. – This moth, whose larva is encountered only occasionally, and usually singly, feeds in mainland Britain on a wide variety of herbaceous plants, and occasionally on shrubs and trees, and I can find only two references indicating distinct local preference, these for hop (*Humulus lupulus*) and creeping thistle (*Cirsium arvense*), both in Chalmers-Hunt (*Butterflies and Moths of Kent,* **1968,** II, 265).

In 1987 I found between half-a-dozen and a dozen nearly full fed larvae of *rumicis* at Newport, Co. Mayo, 28.viii, near Rinnamona, Co. Clare, 29.viii and near Partry, Co. Mayo, 1.ix., all upon bog myrtle (*Myrica gale*), a plant not listed in the text books for this species. As the moth is not uncommon and is widespread in the Burren of Clare, and bog myrtle has a distinctly limited distribution there, there must be other larval foodplants over most of the area.

The time of appearance of these larvae in the almost full fed stage, and the fact that no moths emerged, although the pupae were residing indoors, until the end of October, provide additional confirmation of the insect's univoltinism in Counties Mayo and Clare. However, from some *A. menyanthidis* larvae obtained exactly a month earlier at Rinnamona, a fine female moth emerged 17.x. Finally, I noticed that the *rumicis* I obtained in Co. Clare in June are distinctly paler and brighter than Kentish specimens, although the melanics from the two areas appear identical. – B. K. WEST, 36 Briar Road, Dartford, Kent.

DIASEMIOPSIS RAMBURIALIS DUP. (LEP.: PYRALIDAE) IN WILTSHIRE – a rather worn specimen of this scarce immigrant came to my m.v. light at Dinton, South Wiltshire (v.c.8) on 19.19. 1987, the first recorded occurrence in this county. Other immigrants seen the same night included a single *Agrius convolvuli*, and several *Autographa gamma*. S. PALMER, The Warren, Hindon Road, Dinton, Wiltshire.

Current Literature

The Lepidoptera of Warwickshire: Parts One & Two by **R. Smith and D. Brown**. 64pp. A4. Limp. Warwickshire Museum Service 1987. £1.90.

Despite its title this book is merely an atlas and check-list; it does not deal with times of appearance, voltinism, melanism, local forms or genuine larval foodplants. Part I (Revised) comprises the butterflies, Part II the macro-moths. Separate Introductions are useful and interesting, as is the section on geology and habitats with

an accompanying map marked in 10Km. squares giving the main towns and geological regions, while places mentioned in the text are listed with their map references. Small maps, one for each species, show records designated by one of four symbols, for pre 1900, 1900-1959, 1960-1979 and post 1979, the symbol for the most recent record being used. Details of records are noted only when there are less than four, but there is no assurance regarding the accuracy of records for critical species. A very brief statement on the species' status is given, and up to this point, despite many spelling and other errors, a useful foundation for future work on distribution has been laid, and having accomplished this the authors would have been prudent to have let matters rest.

Unfortunately, for each species larval foodplants are listed, and anomalies abound to defy credence. To give a very few examples from the many available, *Rheumaptera hastata* is stated to feed only on bog myrtle, (surely a birch-feeder in this County ?). *Lithomia solidaginis* on bearberry, *Larentia clavaria* on marsh mallow and *Hadena perplexa* on sea campion. According to Perring and Walters (*Atlas of the British Flora,* 1962), none of these foodplants occur within the County boundaries. *Euproctis chrysorrhoea* is said to feed on ". . . birch, oak, elm, lime and many other deciduous trees. . ." Does *Nophopteryx polycommata* really utilise both privet and ash, and *Hydrelia sylvata* sweet chestnut? *Chlorissa viridata* has but one record, yet three larval foodplants! In summary, much of this list appears imaginative rather than factual, and must seriously detract from the value of a work which should essentially be based upon accurate and verified local information. B. K. WEST.

Legislation to conserve insects in Europe compiled by **N. Mark Collins** 80pp. limp AES Pamphlet no. 13 Amateur Entomologists Society 1987. £3.40.

This useful publication reviews the current legislation covering insects in Europe including, apart from domestic legislation in individual countries, the CITES, Bonn, Ramsar and Bern Conventions. For each European country, the entry records the full title of the appropriate act, the date of implementation, a commentary on the impact of the legislation and a complete list of the insect species protected.

The reviewer was surprised at both the extent and variety of laws protecting European insects – the entry for the Federal Republic of Germany runs to eleven pages, whilst that for the U.K. covers just three! With the constantly changing framwork of legislation, this book cannot be more than a snapshot of the current position, but is nevertheless a valuable and competent piece of work, both for those with a professional interest in conservation, and as a guide for entomologists collecting in Europe. COLIN HART.

The Moths and Butterflies of Northumberland and Durham. Part One: Macrolepidoptera by **T. C. Dunn & J. D. Parrack**, 290pp. Paperback. The Northern Naturalists Union. 1986. £7.

A brief but adequate introduction and preface precede 160 pages of text accompanied by 108 pages of distribution maps. A page of useful references followed by an index of scientific and English names of the species covered completes the work.

The text is written in a most readable style and is packed with a wealth of information, mostly of course on distribution, but also when deemed of special interest on the habits of both adults and larvae. The authors have commendably avoided the superfluous padding sometimes found in local lists and restricted the information on times of appearance and larval foodplants to that relevent to the two counties in the title with the result that the reader is presented with a steady stream of interesting and often little known observations. We are informed for instance that in 1966 a dozen or so larvae of *Xylena exsoleta* were found in a north Durham garden feeding on Chrysanthemums and that the larvae of both *Archieris parthenias* and *Scoliopteryx libatrix* are to found feeding on Rowan in addition to the normally listed feral foodplants. Equally interesting is the appearance of paired male and wingless female of *Erannis defoliaria* inside light traps showing how this species may increase its range in the adult stage. There is also some advice on separating some of the very similar species such as the *Epirrita* group and on page 164 are line drawings of the forewings of *Diarsia rubi* and *D. florida* illustrating a diagnostic character which the reviewer found worked well with English specimens. The authors were also able to make meaningful comparisons on the past and present status of most species mainly thanks to J. E. Robson's comprehensive account of Northumberland and Durham Lepidoptera published between 1899 and 1913. Page references to this work are given in brackets after the 'Bradley and Fletcher Log Book number' which accompanies each species.

The maps which number four to a page are based on the tetrad (2km divisions) system and three different symbols indicate pre 1900, 1900-1950 and post 1950 records. Like most distribution maps they tend to give a more accurate picture of the activities of recorders than the complete distribution of a species, nevertheless with a little imagination one can get an instant impression of the past and present range of each species over the two Counties.

All in all a very well produced local list and a credit to the industry and thoroughness of both authors. In the Foreword it is stated 'The Northern Naturalists Union takes great pride in its publication' and in the reviewer's opinion this sentiment is totally justified. BERNARD SKINNER

TO OUR CONTRIBUTORS

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

Edited by

P. A. SOKOLOFF, M. Sc., C.Biol., M. I. Biol., F.R.E.S.

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HIGHLY recommended Bed and Breakfast accommodation in the famous Burren of Clare, Ireland. Ideally situated actually on the limestone for the well-known Burren specialities, both entomological and botanical. M. V. LIGHTS WELCOME. Book early to avoid disappointment. Mrs. ANN MARTIN, "Villa Maria", Leagh South, Burren, Co. Clare, Eire. (Tel. 010353 65-78019).

WANTED – LONDON AREA LEPIDOPTERA RECORDS – MACRO AND MICRO. I am currently preparing a list of the microlepidoptera and updating Baron de Worms' list of the macro lepidoptera (published in the 1950's) of the London Natural History Society's recording area (a circle radius twenty miles centred upon St. Paul's Cathedral). I am also producing tetrad distribution maps of records made from 1 January 1980 onwards. All data will eventually be published. I would welcome records from anyone who has collected or who intends to collect in this area, which includes all of Middlesex and portions of the vice-counties of Hertfordshire, North Essex, South Essex, West Kent, Surrey and Buckinghamshire. I should be pleased to provide further details, maps and recording sheets if needed, to any entomologists who may care to contact me. C. W. PLANT London Natural History Society, Passmore Edwards Museum, 29 Romford Road, Stratford, London E15 4LZ.

THE VOLTINISM OF *PSEUDARGYROTOZA CONWAGANA* (FABRICUS) (LEP.: TORTRICIDAE)

By A. M. EMMET*

The unexpected sight of a fresh female *P. conwagana* in my MV trap after the night 27/28 October 1987 sent me to the literature and my previous records. Stainton (1859), Wilkinson (1859), Morris (1872) and Meyrick (1928) all give June as the flight period of the adult, Ford (1949) and Emmet (1979) give May-July and Bradley, Tremewan & Smith (1973) May-early July. None of them mentions a second generation.

My own records, however, suggest that a smaller second generation is normal and that the late October specimen could be from a third. Bradley *et al. (op. cit.)* state that this mainly day-flying species is seldom seen at light and I would have agreed prior to 1987. This year nearly 150 came to the trap in my garden at Saffron Walden, though no doubt some individuals presented themselves more than once. The date of appearance for 1985-1987 indicate a first generation flying mainly from mid June until mid July but with individuals persisting to the end of the month, and a second from mid August until early September. These are the figures:–

	First generation	Second generation
1985	2 (29, 30 June)	5 (21-29 August)
1986	5 (2-13 July)	4 (13 August - 1 September)
1987	123 (20 June - 1 August, 109 of them before 13 July)	22 (18 August - 2 September)

The figures are approximate. I use the following code to record numbers:– F (few) = 2-5; S (several) =6-10; M (many) =11+. For the purposes of this paper I have taken F as 3, S as 6 and M (27 June and 20 August) as 11.

These data have immediate practical importance with a new edition of *A field guide to the smaller British Lepidoptera* in preparation. I would welcome supporting or conflicting evidence to ensure that the new entry for this species is correct.

Many of the Tortricinae are polyphagous. British authors cite only *Ligustrum* and *Fraxinus* as foodplants for *P. conwagana*, though Bradley *et. al. (op. cit.)* add *Berberis* and *Syringa* from Continental sources. Is there any evidence that the two apparent generations feed on different foodplants? Has anyone recorded the adult

*Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3A.

as early as May? Would the seeds or berries in which the larva feeds be then ready for oviposition?

References

Bradley, J. D., Tremewan, W. G. & Smith, A., 1973. *British tortricoid moths, Cochylidae and Tortricidae: Tortricinae*, viii, 251 pp., 47 pls. (26 col.). London.

Emmet, A. M. (Ed.), [1979]. *A field guide to the smaller British Lepidoptera,* 271 pp. London.

Ford, L. T., 1949. *A guide to the smaller British Lepidoptera,* 230pp. London.

Meyrick, E., 1928. *A revised handbook of British Lepidoptera,* 914pp. London.

Morris, F. O., 1872. *A natural history of British moths* **3**, iv, 223pp., 36 col. pls. London.

Stainton, H. T., 1859. *A manual of British butterflies and moths,* xi, 480 pp., text figs. London.

Wilkinson, S. J., 1859. *The British Tortrices*, viii, 328 pp., 4 pls. London.

Note

It is clear from a number of sources that *P. conwagana* had an exceptionally good year in 1987. My Orpington (Kent) trap usually yields 3 or 4 specimens per year, generally in July. In 1987 the tally was 19 June – 31 July, 85, (82 before 15 July); 28 August – 3 September, 2, and a single specimen on the night of 30th October! Ian Ferguson, who also runs a trap in Orpington, logged 90 specimens between 10 June and 27 July. – PAUL SOKOLOFF.

SECOND GENERATION LARVA OF EPERMENIA ILLIGERELLA (HBN.) (LEP.: EPERMENIIDAE) – Emmet ([1979] *A field guide to the smaller British Lepidoptera*: 77) states that the second generation larva of *Epermenia illigerella* occurs in umbels of *Angelica sylvestris*. I have bred the second generation several times from larvae collected in July and have never found them in the umbels. On every occasion the larva mined the stem of a side umbel, commencing immediately below the umbel and mining towards the main stem. The larva vacated the stem to pupate by a small exit hole made just before the stem joined the main stem. Affected plants are fairly easy to see as the mined stem droops and the umbel withers. – R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.

RECORDS OF LOCAL AND UNCOMMON CHRYSOMELIDAE (COLEOPTERA) FROM CUMBRIA

By R. W. J. READ*

The following Chrysomelids recorded here have been found mainly in West Cumbria and were discovered during the course of recording for the BRC distribution scheme, and also while carrying out survey work for the NCC invertebrate site register. Most of the species are of local occurrence and are usually regarded as being rare or uncommon in Britain. Locality data taken from specimens in the F. H. Day collection of general coleoptera in the Tullie House Museum, Carlisle has also been included and is indicated by the abbreviation (FHD). The nomenclature follows Kloet & Hincks (1977).

Clytra quadripunctata (L.): Low Wood, nr. Ulpha, SD20/94, 8.vi.80, beaten from Silver Birch above wood ants nest. Keswick. (NY22), (FHD).

Cryptocephalus aureolus Suff.: nr. Watch Hill, Sellafield, NY01/04, 16.vi.79, adults on flowers of *Hieracium*. Seascale, (NY00), (FHD).

Cryptocephalus moraei (L.): Clints Quarry Nature Reserve, nr. Egremont, NY00/12, Church Moss, Beckermet, NY01/05, specimens swept from *Hypericum perforatum*, June, July.

Cryptocephalus parvulus Muller, O.F.: Arnaby Moss, nr. Greenroad, SD19/84, 8.vii.78, one specimen only beaten from Silver Birch.

Chrysolina brunsvicensis (Grav.): Clints Quarry, nr. Egremont, NY00/12. Grubbins Wood Nature Reserve, Arnside, SD44/78, on *Hypericum perforatum*, June, July, September, Nr. Millom, (SD18), (Angus, 1965), Cliburn, (NY58/24), (Davidson, 1961).

Phaedon concinnus Steph.: nr. Ravenglass, SD08/95, River Esk, SD10/95, adults and larvae at the base of *Triglochin maritima* on salt marsh, May, July-October. Newton Marsh, (NY18/55), (FHD).

Hydrothassa glabra (Herbst): Clints Quarry, nr. Egremont, NY00/12, nr. Fleswick, St. Bees, NX94/12, taken in association with *Ranunculus*, April, May. Ambrose Holme, Carlisle, (NY43/57), Newton Moss (NY36), Orton, (NY33/54), Langthaby, (NY56/33), FHD).

Prasocuris junci (Brahm): nr. Forth House, Cockermouth, NY13/33, Barfield Tarn, nr. Bootle, SD10/87, larvae on *Mysotis*, July. Kingmoor, Carlisle, (NY38/58), (FHD), Pettril Valley, (NY44), FHD).

*43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA28 8RF.

Chrysomela aenea L.: River Mite, Miterdale, NY14/00, larvae on *Alnus*. Gelt, (NY52/58), (FHD).

Phytodecta olivacea (Forst.): nr. Marsh House, St. Bees, NX97/10, Church Moss, Beckermet, NY01/06, nr. Hallsenna, NY06/01, beaten from Broom and found on *Genista*, May, July, August. Durdar, (NY40/51), Pettril Valley, (NY44), Orton, (NY33/54), (FHD).

Galeruca tanaceti (L.): Clints Quarry, Egremont, NY00/12, Harrington, NX98/24, adults on *Tussilago* and *Centaurea*, June, October. Newton Reigny Moss, (NY47/30), Kirkston Pass, (NY40/08), (FHD).

Phyllobrotica quadrimaculata (L.): nr. Ravenglass, SD09/95, Kirksanton Moss, SD13/80, in association with *Scutellaria*, August. Windermere, (SD41/98), B. Tomlin, (FHD coll.).

Phyllotreta tetrastigma (Comolli): nr. Haile Hall, Egremont, NY03/09, Hallbolton, Gosforth, NY09/03, nr. Gaterigghow Bridge, NY10/04, May, August. Wetheral, (NY46/54), FHD).

Longitarsus gracilis (Kuts.): Silver Tarn, Nethertown, NX99/06, Wellington Lodge, Whitehaven, NX96/16, nr. Middlebank Farm, Beckermet, NY01/05, Parkgate Tarn, nr. Santon Bridge, NY11/00, Eskmeals SD08/92, Barrel Bank, Ravenglass, SD10/95, taken on *Senecio jacobaeae,* July-November. Silloth, (NY10/53), (FHD).

Longitarsus plantagomaritimus Dollman: Ravenglass, Rivers Esk, Irt and Mite estuaries, SD09, Askam in Furness, SD20/77, Humphrey Head nr. Kents Bank, SD39/74, taken at base of *Plantago maritima* on salt marsh, April-July, September, October

Longitarsus reichei (Allard): nr. Harrington, NX98/24, 6.x.79, one specimen at base of *Plantago maritima*. Bassenthwaite, (NY21/29), Caldew Valley, (NY34), Salkeld, (NY54/36), (FHD).

Hippurphila modeeri (L.): nr. Gosforth, NY06/04, River Ehen, NY00/05, nr. Drigg Village, SD06/98, Eskmeals, SD08/92, nr. Greenroad Station, SD19/84, in association with *Equisetum*, April, May, July, November. Caldew Valley, (NY34), Cummersdale, (NY38/53), Seascale, (NY04/01), (FHD).

Altica britteni Sharp: Harris Side, nr. Kirkland, NY09/18, Wedholme Flow, nr. Wigton, NY22/51, August, October, adults and larvae on *Calluna vulgaris*. Cumwhitton Moss, (NY50/52), Wanfell, (NY52/36), (FHD).

Mantura obtusata (Gyll.): Church Moss, Beckermet, NY01/05, nr. Hollins Bridge, NY10/03, Dubbs Moss Nature Reserve, Eaglesfield, NY10/28, nr. Monks Moors, Eskmeals, SD08/92, June, July, August. Orton, (NY33/54), Pettril Valley, (NY44), Salkeld, (NY54/36), Kirkbride, (NY23/56), (FHD).

Chaetocnema sahlbergi (Gyll.): Barrow Marsh, Ravenglass, SD08/97,

nr. Brig House Farm, SD08/95, nr. Greenroad Station, Millom, SD19/83, June-September. Newton Marsh, (NY18/55), (FHD).

Sphaeroderma rubidum (Graells): Wellington Lodge, Whitehaven, NX96/18, nr. Pattering Holes, St. Bees, NX95/11, nr. Moresby Church, Parton, NX98/21, Beckermet, NY01/06, Clints Quarry, Egremont, NY00/12, Dubbs Moss Nature Reserve, Eaglesfield, NY10/29, Wedholme Flow, NY22/51, Hyton Marsh, Bootle, SD07/88, nr. Drigg Village, SD06/98, Grubbins Wood, Arnside, SD44/78. June-October, adults on *Centaurea nigra*.

Psylliodes chrysocephala (L.): Distington, nr. Workington, (NY00/22), August. Carlisle, (NY39/55), (FHD).

Psylliodes marcida (Ill.): nr. Beckfoot, Allonby, NY09/50, Ravenglass Nature Reserve, SD06/96, Eskmeals Nature Reserve, SD08/96, Haverigg Point, nr. Millom, SD14/77, taken on *Cakile maritima*, May-August. Silloth, (NY10/53), Seascale, (NY04/01), (FHD).

Psylliodes weberi Lohse: nr. Maryport, NY03/37, Blengdale, Gosforth, NY08/05, Calder Woods, nr. Calderbridge, NY05/07, June, August, September, adults on *Nasturtium*.

Acknowledgements

I wish to thank Dr. Michael Cox, (British Museum, Natural History) for very kindly identifying a number of different species recorded here. I would also like to thank the Cumbria Trust for Nature Conservation for giving me permission to visit and survey some of their reserves in West Cumbria. My thanks also go to Mr. David Clarke, curator of the Tullie House Museum, Carlisle for kindly allowing me access to the F. H. Day collection.

References

Angus, R. B., 1965, Further Coleoptera from Cumberland, Westmorland and the Northern part of Lancashire, *Entomologist mon. Mag.*, **101**:7.

Davidson, W. F., 1961, Notes on Cumberland and Westmorland Coleoptera, *Entomologist's mon. Mag.*, **97**:20.

Kloet, G. S., and Hincks, W. D., 1977, *A check list of British insects*, **11**(3), Coleoptera and Strepsiptera, 2nd. ed., London.

A POSSIBLY UNIQUE BILATERAL GYNANDROMORPH OF THE WHITE ADMIRAL BUTTERFLY, *LADOGA CAMILLA* L.

By G. W. Beccaloni*

Ladoga camilla L. is one of the less variable of British butterflies, with only 15 aberrations described to date (Howarth, 1984). The principle form of this variation consists of a reduction in the amount of white scaling present on both the upper and under sides of the wings. Few other types of variation are known to occur. As far as it has been possible to determine, no gynandromorphic specimens have previously been described and a search made through the *camilla* specimens in the National Collection at the British Museum (Natural History) has failed to reveal a single example of this condition. The specimen illustrated (Fig. 1) is therefore possibly the first bilateral gynandromorph of *L. camilla* known.

This specimen was taken by myself, along with several typical examples of *camilla*, at a location near Dorking, Surrey on the 16th July 1986. It is at present in my collection. Although the wing patterning of both male and female *camilla* is very similar, both wing size and shape differ quite considerably between the sexes, with the female's wings being larger and more rounded than the smaller and more angular wings of the male.

These characteristics are clearly displayed in the specimen illustrated; its left half being male and its right half female. It is probable that due to the difficulty experienced in distinguishing male from female *camilla*, especially in the field, that gynandromorphic examples of this species have been overlooked in the past, thereby accounting for their apparent absence in collections and in the literature.

The specimen illustrated is not only interesting for its gynandromorphism however, but because it has an unusual venational defect in vein 2 of its female (right) forewing. This defect is responsible for the union of the two white spots situated between veins 1 and 3 of this forewing. The black-scaled segment of vein 2 which usually divides these spots is absent, thus allowing them to unite. All other veins appear to be normal.

In addition, the white band across the female hindwing is slightly larger than in the type form, as are several of the white markings present on the female forewing. I can only find one previously described aberration of *camilla* which exhibits an *increase* in white scaling, this being ab. *latealba* Verity. The condition described above is similar to this aberration. Verity (1950) states that

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Figure 1. *Lagoda camilla* L. Bilateral gynandromorph, with left side male, right side female. Surrey 16.vii.1986. (upperside top, underside bottom).

ab. *latealba* is common in France but I have been unable to locate any British examples.

It is possible that both the venational defect and the enlargement of the white markings, are direct consequences of the specimen being gynandromorphic because of the unlikelihood of these rare conditions occurring together independently in the same butterfly.

Acknowledgements

I am very grateful to Mr. D. J. Carter and Mr. A. Watson both of the British Museum (Natural History) for confirming that the specimen is a bilateral gynandromorph and for allowing me to view the numerous *camilla* specimens in the National Collection. My thanks also go to Mr. A. D. A. Russwurm and Mr. T. G. Howarth for their help in tracking down ab. *latealba* and for determining the venational defect. Finally, I would like to thank Mr. C. H. B. Smith for

taking the excellent photographs of the specimen and Mr. D. S. K. McNamara for typing this manuscript.

References

Howarth, T. G., 1973. *South's British Butterflies.* Frederick Warne & Co. Ltd., London.

Verity, R., 1950. *La Farfalle diurne d'Italia* 4. Firenze.

EUPITHECIA VULGATA HAWORTH (THE COMMON PUG) SUBSPECIES SCOTICA COCKAYNE (LEP.: GEOMETRIDAE) IN CUMBRIA – *E. vulgata* is represented in Britain by three subspecies: *E. vulgata vulgata* Haworth occurs commonly throughout England, and in Scotland the paler and more strongly marked subspecies *scotica* Cockayne predominates. The very localised subspecies *clarensis* Huggins is restricted to County Clare in Ireland.

It is uncertain which subspecies are present in northern England as, so far as I am aware, no quantitative studies have been made on the English/Scottish borders. The Rothamsted Insect Survey light trap at Embleton (Site No. 464, O. S. Grid Ref. NV 232 227) in Cumbria gives an opportunity to rectify this and the results for 1987 are tabulated below.

	Total	Percentage
E. vulgata	26	
indeterminate	6	23
ssp. *vulgata*	9	35
ssp. *scotica*	11	42

There do not appear to be intermediate forms between *scotica* and *vulgata* at this site. All individuals in good condition were easily attributable to one subspecies or the other. Further investigations are required to determine which subspecies are present in more of these border regions but the present results suggest that clining does not occur in *E. vulgata* and that both subspecies *scotica* and *vulgata* are found together in the same areas. Without allopatric separation, questions may be raised about the subspecific status of *scotica.* Further observations from Rothamsted Insect Survey traps will be published as they become available.

Thanks are extended to Mrs. Betty Dodd for operating the trap at Embleton. ADRIAN M. RILEY, Entomology and Nematology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

EXTREME UNNAMED ABERRATIONS OF *MANIOLA JURTINA* L. (LEP.: SATYRIDAE)

By R. D. G. BARRINGTON B.Sc.*

Variation is very extensive in *Maniola jurtina*: ground colour forms range from white to black, forwing fulvous varies from white to deep red or brown and spotting from total absence to marked enlargement and increase in number. Gynandromorphs and homoeosis are very uncommon. Many forms have been named, although in a number of cases these names are unhelpful in advancing our understanding of the genetics of variation. The reason for this is that many aberrations, often individually named, can be fitted into a series of transitional forms, and thus may not be genetically "distinct" from the "major" aberrations at either end of the series. Conversely, distinctive "major" aberrations may have rare extreme forms at either end of the graded series which may appear to be separate forms but are likely to be genetically linked. This paper discusses three such aberrations.

There have been two major reviews covering aberrations of *jurtina* – by Leeds (1948), and more recently by Goodson. Leeds organised the aberrations into a logical sequence of graded forms, occasionally ignoring the laws of priority by renaming forms to fit in with his ordered series. Despite this invalidity, or perhaps because of it, the end product is straightforward and easy to use. Goodson's review was part of a larger exercise to catalogue and describe every named variety of British butterfly. The *jurtina* section is more comprehensive than that of Leeds, and original names are restored. Since the compilation only one further major aberration has been described: ab. *postmultifidus* Lipscomb. (Lipscomb, 1980).

ab. postmultifidus Lipscomb

Figure 1 represents a typical female *postmultifidus*. Figure 2 is a more extreme, and much rarer, example. Figure 3 and 4 appear, at first sight, to be quite distinct aberrations. Closer examination suggests that they may be part of a graded series which contains *postmultifidus*. For example, the fulvous colouration on the upperside of the forewing is markedly reduced; in the hindwing the median band of the underside is narrowed (both characteristics of *postmultifidus*) and, although very indistinct, there are the bands of darker scaling along the veins across the lower half of the median band. *Postmultifidus* specimens can be strongly marked (as in figs. 1 and 2), or weakly marked (as in figs. 3 and 4). My own breeding

* The Old College Arms, Stour Row, Shaftsbury, Dorset.

1

4

2

5

3

6

7

experiments suggest that this aberration is inherited on a multifactorial basis, and in consequence is variable in its expression.

ab. excessa Leeds

Figure 5 shows a typical, although unusually well developed, female ab. *excessa*. Figure 6 shows development of the hindwing character (ab. *postexcessa* Leeds), this being the only known specimen with two spots on the upperside of each hindwing. Figure 8 is a remarkable aberration, an extreme form of *excessa,* probably unique. The spots are slightly streaked outwards, a characteristic that sometimes accompanies spot enlargement both in *jurtina* and other satyrids such as *Aphantopus hyperantus* L., *Lasiommata megera* L., *Erebia aethiops* L. and *Coenonympha tullia* L.

Figure 7 represents another probably unique specimen. The outer end of the black hindwing rays are the position for a normal row of submedian spots, such as occur on the underside of some specimens, especially marked in *postexcessa.* The inward raying is a most unusual character, unknown hitherto from either *jurtina* or other satyrids. In *Pyronia tithonus* L., the British satyrid most

Key

Fig. 1 ab. *postmultifidus.* Stour Row, Dorest. July 1981 (R. Barrington).
Fig. 2 ab. *postmultifidus*. Guildford, Surrey. August 1946. (J. C. B. Craske in BM(NH)).
Fig. 3. extreme ab. *postmultifidus.* Newlands Corner, Surrey. July 1960. (R. E. Stockley in BM(NH)).
Fig. 4. extreme ab. *postmultifidus.* "Ridgeway". June 1934. (J. How in BM (NH)).
Fig. 5. ab. *excessa.* Stour Row, Dorset. June 1985. (R. Barrington).
Fig. 6. ab. *postexcessa.* Bere, Hants. July 1968. (R. M. Craske).
Fig. 7. unnamed. Ringmer, East Sussex. July 1985. (R. Dennis).
Fig. 8. extreme ab. *excessa.* Whiteparish, Wilts. July 1973. (R. C. Revels). (x 1.4).

closely allied to *jurtina*, extreme hindwing spotting forms are more frequent, but none show inward raying – the typical pattern being an oval shape accompanied by outward raying.

Within its normal range of expression, ab. *excessa* is most variable. Lipscombe (1971) reported breeding ab.*excessa* as a simple recessive; however as this breeding experiment was concerned with the melanic ab. *atrescens* Leeds which he clearly showed to be a lethal form, the results for the *excessa* form may have been biased by the lethal gene. My own breeding experiments suggest that *excessa* is a variable, multifactorial form, and it seems likely that figure 8 is simply at the most extreme end of the range of *excessa* forms, but figure 7, with its unique inward black raying may be a quite separate and new form, although one is wary of giving it a new name to add to the already long list of named *jurtina* aberrations.

Acknowledgements

I am most grateful to Rod Dennis and Richard Revels for taking the trouble to photograph their fine insects; to Robert Craske for permission to photograph the two aberrations from his collection now in the British Museum (Natural History), and to David Carter for facilitating my access to the National Collection.

References

Goodson, A. L. & Read, D. K. (unpublished) *Aberrational and subspecific forms of British Lepidoptera.* British Museum (Natural History) – for internal use only.

Howarth, T. G. 1973. *Colour identification guide to butterflies of the British Isles.* Warne, London.

Leeds, H. A. 1948-49. British aberrations of the Gatekeeper butterfly (*Maniola tithonus* L.), Meadow Brown Butterfly (*Maniola jurtina* L.) and the Small Heath Butterfly (*Coenonympha pamphilus* L.) *Proc. Trans.S.Lond.ent.nat.Hist.Soc.* **80**-122.

Lipscomb, C. G. L. 1971. *Maniola jurtina* Linn.: a breeding experiment. *Entomologist's Rec. J. Var.* **83**: 333.

Lipscomb, C. G. L. 1980. A new form of *Maniola jurtina* L. *Entomologist's Rec. J. Var.* **92**: 205.

Russwurm, A. D. A. 1978. *Aberrations of British Butterflies.* Classey.

COMMUNICATION IN ANTS (HYMENOPTERA: FORMICIDAE)

By STEPHEN F. HENNING*

While watching a colony of ants busily going about their affairs, whether it be in the hot bushveld of the Transvaal or around the kitchen sink of your own home, have you ever wondered how they communicate? In such a large social organisation there must be some method of informing each other when they have found food and where to find it, or warning each other when danger threatens. Do they talk, use sign language, or what? In fact they use smells or odours to communicate. The volatile chemicals produced by ants are known as pheromones. A pheromone can be defined as a substance secreted from a gland and released by an animal for detection and response by others of the same species.

It has been found only in recent years that in the social biology of ants much of their behaviour is released and controlled by pheromones. It is now well known that workers of many species possess trail and alarm pheromones. It has also been established that pheromones are associated with recognition and brood-tending. If foraging ant workers find food that is too large to be carried back to the nest without help, they will first feed, and then immediately return to the nest, depositing a chemical substance along the way on the ground. These chemicals are, appropriately, called trail pheromones.

The glandular origin of ant trail pheromones varies considerably from subfamily to subfamily. In the Formicinae the trail pheromones are produced by the hind gut. Hölldobler and Wilson (1977) found in *Oecophylla longinoda* that odour trails are laid from the rectal gland, a previously unrecognized musculated organ located in the rear of the rectal sac. Trail-laying is achieved by eversion of the rectal gland. In order to lay a trail the ant lowers her abdomen, rotates the terminal segment downward, and extrudes the rectal gland. The gland is then dragged lightly over the substratum, apparently resting on a "sled" composed of two pairs of long bristles that lead back from the upper edge of the acidopore.

Most workers encountering a freshly laid trail respond at once by following it outward from the nest. The workers do not follow a liquid odour trace on the ground. Instead, they move through the vapour created by diffusion of the pheromone into the air. According to Wilson (1971), there is a space, which theoretical calculations show to be semi-ellipsoidal in shape, within which the pheromone is detected by the ants. As recruited workers travel through this "vapour tunnel" they sweep their antennae from side to side, evidently testing the air for odorant molecules. In fact, Wilson

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(1971) points out that they are able not only to detect these molecules in the gaseous state, but also move up gradients of molecular concentratration, a process of orientation referred to as osmotropotaxis.

Close observation of ants on a pheromone trail will reveal that certain individuals trail or dab the tips of their abdomens on the substrate, whether it be the ground, a wall or branch of a tree. All the ants can be seen hurrying along the trail, their antennae bent forward, following the pheromone odour; ants that have filled themselves at the food site strengthen the trail when they return to the nest. Provided that there is food in plenty, a large number of workers are recruited to the site and a broad trail is established. However, as the food supply is depleted, fewer ants pass along the trail and, as a result, the odour diminishes and fewer and fewer ants visit the site until eventually the food is finished (Skaife, 1979).

The trail pheromones of the Myrmicinae have different glandular sources. In the genus *Crematogaster* the tarsal glands are the source of the trail substance, while in *Pheidole* and *Solenopsis* it is the Dufour's gland. In the genera *Monomorium, Huberia* and *Tetramorium* the glandular source is the poison gland. Wilson (1971) discussed trail-laying in the Fire Ant *Solenopsis saevissima.* He observed that when a worker ant returned to the nest after discovering a food source, it walked at a slower, more deliberate pace with its entire body held closer to the ground. At frequent intervals the sting is extruded, and its tip drawn lightly over the ground surface. As the sting touches the surface, a pheromone flows down from the Dufour's gland and forms the odour trail.

The secretions of the majority of the exocrine glands of ants are associated with defensive or aggressive behaviour. If an ant is attacked or harassed while along a trail, foraging for food, or merely within the confines of the nest, it will release the contents of its glands and any ants in the vicinity detecting the odour will immediately become alarmed. An alarm reaction can take a number of different forms: often a very high concentration of the pheromone makes the ant flee from the source, a lower concentration, however, will attract ants, arousing aggression and attracting assistance.

An alarm pheromone acts as an attractant in its lowest concentration, and the first response shown by other ants is an orientation towards the source. But immediately thereafter they show alarm and typically open their jaws in an aggressive fashion. *Oecophylla* workers raise their abdomens and continue their approach with a somewhat stiff-legged gait, alert and attentive to every movement. *Crematogaster* also raise the abdomen, but behave quite differently: instead of a cautious approach they become frenzied, rushing about in search of the disturbance. *Odontomachus* workers, which hold their jaws wide open when alarmed, readily snap them closed with

an audible click, the force capable of severing the limbs of other insects. A different attitude is adopted by the workers of *Polyrhachis*, which lower the abdomen between the legs. These, and other formicine species, spray mixtures of formic acid and pheromone from the tip of abdomen, and these mixtures have a dual purpose, serving both as defensive substances and as alarm pheromones (Skaife, 1979).

Blum (1974) noted that alarm pheromones possess several functions clearly separate from that of merely causing alarm in workers. The other most important function is that it serves as an attractant. It has been found that high concentrations of the alarm pheromone of the myrmicine *Pogonomyrmex badius* released strong alarm behaviour, whereas low concentrations acted as excellent attractants. It has also been demonstrated that alarm pheromones were utilized by three species of ants as recruitment stimuli when used in conjunction with trail pheromones. For example, workers of the formicine *Camponotus socius* Roger fortify their recruitment trails with an alarm pheromone, formic acid, which is highly effective in attracting excited recruits. Blum (1974) believes that because of their capacity to function as low-level attractants, alarm pheromones have probably been frequently utilized to increase the stimulating efficiency of a recruitment signal.

Another aspect of chemical communication is the manner in which the chemical signals themselves alter in space and time. Bradshaw *et. al.* (1979) point out that fundamental to this is the concept of the "active space", as the zone around the point of emission within which the concentration of the chemical stimulus is at or above that required for behavioural response. They point out that in a social context, the relationship between the active spaces of a number of chemical releasers will largely determine the behaviour patterns of responding ants.

Bradshaw *et. al.* (1979) found that the mandibular gland secretions of the major workers of the formicine ant *Oecophylla longinoda* released in other major workers a complex pattern of behaviour, including components of alerting, attraction and biting. In a behavioural study they found that all ants within a range of 5-19cm were alerted within 30 seconds of the presentation of the secretion, their rate of locomation increased, they made short, fast runs with frequent changes of direction, with their mandibles held open and their antennae raised. Within approximately a 5cm range most ants were attracted directly towards the source of the chemicals which were initially repellent at a range of less than 1cm; the ants often circled with mandibles spread and gaster raised from the horizontal. Several ants within 2cm halted, and those near the source of the secretion bit it with their mandibles (Bradshaw *et al.*, 1979). They found that the main constituents of the secretion were hexanal and 1-hexanol, which release alerting and attraction respectively.

Of the thirty or so trace components, they found at least two, 2-butyl-2-octenal and 3-undecanone, act as markers for attack. They point out that the behaviour of ants responding to the mandibular gland secretion in still air can be expained in terms of the behavioural components released by the four principal chemicals. "Hexanal has the most rapidly expanding active space, within which workers are alerted. The active space of 1-hexanol initially expands at about half the rate of the hexanal, and within this the workers are attracted towards the point of deposition of the secretion. The biting markers, 3-undecanone and 2-butyl-2-octenal, are active only in the immediate vicinity of their source" (Bradshaw *et al.,* 1979).

The alarm pheromones of ants have different glandular origins. In species of the subfamilies Formicinae and Myrmicinae it has been established that the mandibular glands in the head and the poison and Dufour's glands in the abdominal tip play an important role in attraction and alarm. Cammaerts-Tricot (1974) found that workers of *Myrmica rubra* deposited an attractive secretion from the Dufour's gland when walking around an ant of another species. If the intruder was not killed, the *M. rubra* worker laid a trail of the poison gland secretion from the intruder to the nest, and then returned to the intruder, laying a trail of the Dufour's gland secretion from the nest. The deposit of Dufour's gland secretion consisted of discrete droplets, applied by intermittent contact of the gaster with the ground, whereas poison gland trails were continuous. The Dufour's gland droplets attracted many fellow workers to the site of the intruder.

Glancey *et al.* (1070) demonstrated in the Fire Ant *Solenopsis invicta* Buren (misidentified as *S. saevissima* (F. Smith)) that the action of the worker ants in locating, transporting and caring for the brood is induced by a pheromone (or pheromones). They did this by extracting the brood of the ant in cold hexane. The clear extract was then poured over corn cob grits (inert material) which were mixed till the hexane evaporated. The treated and untreated (controls) grits were placed on the foraging platform that served the colony. The ants began immediately to pick up the treated grits and carry them to the nest and, after about an hour, they had removed all the treated grits, but left the untreated. They observed that the ants groomed the treated grits in the nest, rubbed them with their antennae and palpi, and generally appeared to care for them as they did their brood. They also found that the worker ants harvested grits treated with extracts of larvae, but they did not harvest any grits treated with extracts of pupae. Neither the glandular source nor the chemical composition of these pheromones were demonstrated.

Walsh and Tschinkel (1974) demonstrated in *Solenopsis invicta* the presence of a non-volatile brood pheromone that was distributed

evenly over the pre-adult cuticle and whose potency was abruptly reduced with the shedding of the pupal skin at eclosion. They found that the signal was completely lost within 72 hours after death.

The evidence given by Walsh and Tschinkel for the existence of a brood pheromone was the retrieval of skins and larval contents on blotting paper by the worker ants, the persistence of the signal for long periods after death, despite disfigurement of the larval cuticle, and the ability of organic solvents to destroy the signal without visibly altering the cuticle. The reasons given by Walsh and Tshinkel for believing that the brood pheromone is non-volatile and transmits by contact were that the worker ants showed no signs of orientation prior to contacting live brood. Also in an experiment with an olfactometer they obtained only random responses from worker ants, thus demonstrating the pheromone's low volatility. They demonstrated that the cuticle must be contacted to be recognized, by the failure of worker ants to retrieve skins wrapped in extremely thin, porous laboratory tissue.

Brain (1975) conducted a series of experiments on the brood of ants belonging to the genus *Myrmica.* He found the workers were unable to distinguish larvae from pharate pupae, and that both aroused more worker response than either pupae or flaccid or shaved larvae. He found that larval skins elicited a normal response, and by masking portions with varnish showed that the surface signal was widely dispersed. He found that this larval recognition signal was species-specific, at least between *Myrmica rubra* and *M. scrabinodes.* Brian (1975) compared his results on *Myrmica* with those given by Glancey *et al.* (1970) and Walsh and Tschinkel (1974) on *Solenopsis.* He found the points of agreement between *Myrmica* and *Solenopsis* in respect of brood recognition appeared to be: pupae differed from larvae, chemical cues exist, the material is soluble in ether, is widely dispersed over the cuticle, and is of low volatility. The points of disagreement were: the substance is soluble in hexane and methanol in *Solenopsis* but not in *Myrmica*, accessory tactile cues are not important in *Solenopsis*, but are undoubtedly important in *Myrmica.* Also, whereas in *Myrmica* pharate pupae are picked up in preference to pupae, in *Solenopsis* it appeared to be the other way round.

Ants have also developed glands for use in other spheres of communication. They are able to distinguish one another from members of other colonies in that they bear a unique and complex odour; this "colony odour" is thought to be a mixture of chemicals derived from the nest material, objects in the immediate vicinity of the nest, and especially from the food that members of the colony consume. The indentity of workers is also maintained by trophallaxis – the exchange of liquids both from mouth and anus by processes of regurgitation and defecation. This lively exchange of food from what has been termed the "social stomach", is encou-

raged by workers, who both beg food and offer theirs to others. However, while in the myrmecioid subfamilies workers frequently engage in the exchange of reguritated food, in the poneroid subfamilies exchange is either poor or totally absent. It is apparent, therefore, that other mechanisms ensure a uniform odour within a colony, and that these may involve not only odours of the nest and its surroundings, but also the composition of the pheromones in each colony (Skaife, 1979).

References

Blum, M. S. 1974. Pheromonal sociality in Hymenoptera, *in* Birch, M.C., *Pheromones*. North-Holland Publishing Company, Amsterdam, pp. 222-249.

Bradshaw, J. W. S., Baker, R. and Howse, P. E. 1979. Multicomponent alarm pheromones in the mandibular glands of major workers of the African weaver ant, *Oecophylla longinoda. Physiol. Ent.* **4**: 15-25.

Brain, M. V. 1975. Larval recongition by workers of the ant *Myrimica. Anim. Beha.* **23**: 745-756.

Cammaerts-Tricot, M. C. 1974. Piste et pheromone attractive chez la foutmi *Myrmica rubra. J. Comp. Physiol.* **88**: 373-382.

Glancey, B. M., Stringer, C. E., Craig, C. H., Bishop, P. M. and Martin, B. B. 1970. Pheromones may induce brood tending in the Fire Ant, *Solenopsis saevissima. Nature* **226**: 863-864.

Hölldobler, B. and Wilson, E. O. 1977. Weaver Ants: Social Establishment and Maintenance of Territory. *Science* **195**: 900-902.

Skaife, S. H. 1979. *African Insect Life,* revised by J. Ledger. C. Struik Publishers, Cape Town/Johannesburg.

Walsh, J. P. and Tschinkel, W. R. 1974. brood recognition by contact pheromone in the imported fire ant, *Solenopsis invicta. Amin. Behav.* **22**: 695-704.

Wilson, E. O. 1971. *The Insect Societies*. The Belknap Press of Harvard University Press, Cambridge, Massechusetts.

ON BUTTERFLIES FROM MADEIRA, WITH A CHECK LIST

By OLE KARSHOLT*

A recent paper by Owen, Shreeve and Smith (1987) states that only 14 species of butterflies are found in the Island of Madeira (even though they list 15 species in their paper!). In another recent paper, Jones *et. al.*, (1987) list 16 species of butterflies from Madeira, basing their list on Higgins & Riley (1983). The discrepancy between these publications relate to species which will be discussed below.

The rich collection of Lepidoptera from Madeira kept in the Zoological Museum of the University of Copenhagen (ZMUC) contains a single specimen of *Hipparchia statilinus* (Hufnagel). The specimen is labelled: Madeira, Nogueira, Camara de Cargo, 1000m, 23.viii. 1974, E. Traugott-Olsen leg. This specimen has been examined by L. G. Higgins, who stated it to be of the form *allionia* (Fabricius), and *statilinus* was consequently recorded from Madeira by Higgins & Riley (1983). In spite of much collecting of butterflies in Madeira, this species has apparently only been collected on this single occasion, and should thus be considered a vagrant, possibly from the Iberian Peninsula, where the form *allionia* occurs (Higgins & Riley, 1983).

Among the 15 butterfly species of Madeira dealt with in the paper of Owen et al. (1987), the record of *Colias hyale* (Linnaeus) seems doubtful. The species was mentioned from Madeira by Cockerell (1923), who writes: "Burr mentions that he saw in the collection of the Seminario at Funchal, presumably collected in Madeira, *Colias hyale* L., . . .". I have not been able to trace whether Burr published on this matter himself. The words "presumably collected in Madeira" suggest that the specimen(s) in question was not labelled. If it actually was collected in Madeira it may well have been a specimen of *C. croceus* (Fourcroy) f. *helice* (Hübner). It is strange that *hyale* is not mentioned at all in the detailed card index of Lepidoptera of Madeira compiled by the late N. L. Wolff and now in ZMUC. Wolff knew of Cockerell's paper, but apparently he considered the record too doubtful to be included in the list of Lepidoptera of Madeira.

Wolff's card index includes another butterfly species not listed by Owen et al. (1987), viz. *Cynthia virginiensis* (Drury). Its occurrence in Madeira has been recorded by e.g., Rebel (1917), Higgins & Riley (1973), and Oehmig (1977), but these records apparently are based on that of Godman (1870). Godman briefly mentions *virginiensis* (under the name of *Vanessa hunteri*) from Madeira, but

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Fig. 1. *Hipparchia statilinus* (Hfn.) Madeira, Nogueira, Camara de Cargo, 1000m, 23.viii.1974, E. Traugott-Olsen leg., coll. ZMUC. (x1).
Fig. 2. Underside.

not from the Canary Islands where it occurs regularly, and apparently he mixed up the islands from where this species is recorded. No further records of *virginiensis* are known to me, and in a new edition of their book Higgins & Riley (1983) have omitted the record from Madeira. The butterfly fauna of Madeira thus includes the following 16 species (including 4 endemic subspecies):

Pieris brassicae (Linnaeus, 1758) ssp. *wollastoni* Butler, 1886; *Pieris rapae* (Linnaeus, 1758); *Colias croceus* (Fourcroy, 1785); *Gonepteryx cleopatra* (Linnaeus, 1767) ssp. *maderensis* Felder, 1862; *Danaus plexippus* (Linnaeus, 1758); *Vanessa atalanta* (Linnaeus, 1758); *Vanessa indica* (Herbst, 1794); *Cynthia cardui* (Linnaeus, 1758); *Issoria lathonia* (Linnaeus, 1758); *Hypolimnas misippus* (Linnaeus, 1764); *Hipparchia aristaeus* (Bonelli, 1826) ssp. *maderensis* (Baker, 1891); *Hipparchia statilinus* (Hufnagel, 1766); *Pararge aegeria* (Linnaeus, 1758); *Pararge xiphia* (Fabricius, 1775); *Lycaena phlaeas* (Linnaeus, 1761) ssp. *phlaeoides* (Staudinger, 1901); *Lampides boeticus* (Linnaeus, 1767).

Acknowledgements

I wish to take the opportunity to thank Mr. Ernst Traugott-Olsen, Marbella, Spain for donating the specimen of *H. statilinus,* together with other Lepidoptera from Madeira collected by him to the collection of ZMUC. Mr. Gert Brovad, ZMUC, has kindly taken the photographs.

References

Cockerell, T. D. A. 1923. The Lepidoptera of the Madeira Islands. *Entomologist* **56**: 243-247.

Godman, F. D. 1870. *Natural history of Azores, or Western Islands.* v.+ 358pp, 2 maps. London.

Higgins, L. G. & Riley, N. D. 1973. *A Field Guide to the Butterflies of Britain and Europe.* 2. ed. 381pp, 60pls. London.

Higgins, L. G. & Riley, N. D. 1983. *A Field Guide to the Butterflies of Britain and Europe.* 5. ed. 384pp (incl. 63 pls.). London.

Jones, M. J., Lace, L. A., Hounsome, M. V. and Hamer, K. 1987: The butterflies and birds of Madeira and La Gomera: taxon cycles and human influence. *Biol. J. Linn. Soc.* **31**: 95-111.

Oehmig, S. 1977. Die Tagfalter Madeiras. *Ent. Z., Frankf. a. M.* **87**: 169-176, 189-199.

Owen, D. F., Shreeve, T. G. and Smith, A. G. 1987. Butterflies on Madeira in April 1985. *Entomologist's Rec. J. Var.* **99**: 29-32.

Rebel, H. 1917. Siebenter Beitrag zur Lepidopterenfauna der Kanaren. *Annln naturh. Mus. Wien.* **31**: 1-62.

OMALIUM ALLARDI FAIRM. & BRIS. (COL.: STAPHYLINIDAE) IN SPEYSIDE. – Lately when examining my few exponents of *Omalium septentrionis* Thoms. (*ex* P. Harwood) it became evident that one of them was quite different from the rest, and was in fact *O. allardi*; it bears the data 'Kincraig 5.v.52'. The only Scottish records I have for this rare and little-recorded species are 'Solway, Tweed and Clyde districts' (Fowler, 1888, *Col. Brit. Isl.* **2**: 414) and 'N. Uist, Outer Hebrides, in rock-dove's nest (Joy)' (Fowler & Donisthorpe, 1913, *ibid.* **6**: 243). The sculpture of the head and elytra and form of the temples are quite characteristic in *allardi*, whilst the pale humeral region is usually a reliable pointer to it. The beetle is clearly associated with bird dung, and also with old bones; the former habit recalls that of *Phyllodrepa puberula* Bernh. and *Aleochara villosa* Mann. The record of *O. allardi* from Cheshunt, Herts. (1979, *Ent.mon.Mag.* **115**: 154), where the date of capture was wrongly given by me as 1st June – it should have been 1st April ––, remains my sole find of the species. – A. ALLEN, 49 Montcalm Road, London SE7.

ZYRAS HAWORTHI STEPH. (COL.: STAPHYLINIDAE), A CORRECTION – In my note on this species (*Ent. Rec.* **100**:47), the locality of the capture was incorrectly given as Brackett's Copse, Harwood. The locality should read Brackett's Coppice, Halstock, Dorset. P. D. ORTON.

MICROLEPIDOPTERA – A REVIEW OF THE YEAR 1986

Compiled by DAVID J. L. AGASSIZ*

1986 was a poor year rather like 1985. The spring was cool and wet, the summer was mediocre but there was a pleasant autumn allowing a few species to catch up, but it was too late to do much good for the season. The number of new species added during the year is less than in some recent years and many recorders have found it hard to think of records of interest to submit– but there are always some exceptions.

The species discovered new to Britain were *Pammene ignorata* Kuznetsov which E. C. Pelham-Clinton took in his Devonshire garden; it is a species not unlike some other *Pammene* species and when worn is not at all obvious, it may be resident but overlooked hitherto. The discovery of *Scrobipalpa stangei* Hering was revealed at the Annual Exhibition of the British Entomological & Natural History Society, although specimens had been identified in the British Museum (Natual History) the previous year. It was taken in the Isle of Wight in the last century and two attempts to rediscover the moth there had yielded no sign of it. Lastly a specimen of a *Homosetia* species was taken by the compiler of this review, it had to be flown to Washington D.C. for identification but even then the specific name was not revealed. It agrees with female specimens of a species known at low density in North America, but whether or not it is a named species remains to be seen. The species was probably imported but could have become locally established.

As interesting as newly discovered species are long lost ones which were given up for extinct. Such an example is *Acrolepiopsis marcidella* (Curt.) which had not been seen since the last century when no more than six specimens were recorded, a specimen found in Hampshire by Dr. John Langmaid raises questions about this insect which many had assumed to be a migrant and about which very little is known. We now know more about its congeners so surely a fascinating dicovery awaits us.

Almost as remarkable is the rediscovery of *Aplota palpella* (Haw.) whose retiring habits on the trunks of old trees have been revealed by P. H. Sterling, as a result it may be found to be more widespread.

Another very rare species in Britain is *Oxyptilus laetus* (Zell.); a specimen thought to be of this species was recorded in Cornwall, it is best known from Spain and must be considered most likely a migrant. *Parornix carpinella* (Frey) was added to our list a year ago and with his usual thoroughness A. M. Emmet has found more

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specimens and worked out the details of the life history. *Cydia corollana* (Hübn.) is another insect worthy of mention for there have been only very few records prior to that of P. Jewess in the ensuing list.

Several other species recorded are worthy of mention, but comments on these are interspersed with the systematic list which has been edited slightly more rigorously than in former years.

In the review for 1985 I drew attention to the researches of the French entomologist Christian Gibeaux into the genus *Stenoptilia.* These have continued and according to his latest paper we have five resident species of the *S. bipunctidactyla* group. These may be briefly summarised as follows:

S. bipunctidactyla (Scop.) whose larva feeds on *Knautia; S. picardi* Gibeaux whose larva feeds on *Succisa; S. scabiodactyla* (Gregson) whose larva feeds on *Scabiosa; S. islandica* (Staudinger), the Scottish mountain species and *S. arida* (Zeller) = *gallobritannidactyla* Gibeaux.

I neglected to refer to published lists a year ago and so this summary of significant publications covers two years. *British Pyralid Moths* by Barry Goater is an important contribution since Beirne's book is both out-of-date and out of print. Its Danish counterpart *Nordeuropas Pyralider* by Eivind Palm appeared at almost the same time, but because of the language will appeal less to British students. The same problem does not affect the *Catalogue of the Lepidoptera of Denmark* by Karsten Schnack since it is produced in both Danish and English and is an important contribution to the classification of the micros. Many of the changes are included in *An indexed list of British Butterflies and Moths* by Bradley and Fletcher which needs to be read in conjunction with the list of amendments published by Emmet in *Ent. Gaz.* **38**: 31-52.

Lists of microlepidoptera from Somerset appeared in *Ent. Rec.* **97**: 171ff (A. M. Emmet) and *Ent. Rec.* **98**: 193 (R. J. Heckford). Further Aberdeenshire & Kincardineshire records appeared in *Ent. Rec.* **99**: 111 (Palmer & Young); a list from Tiree in *Ent. Gaz.* **37**: 204f (Harper & Young). Pyralid and Plume moths from north Wales appeared in *Ent. Rec.* **98**: 237 (H. N. Michaelis). Immigrant records were included in *Ent. Rec.* **97**: 183 & 227 and **99**: 192ff.

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A fuller systematic list containing most records submitted is available from the compiler.

Systematic list

ERIOCRANIIDAE

Eriocrania chrysolepidella (Zell.) – Near Brinklow (38) mines on *Corylus*, v.85 – JR

E. unimaculella (Zett.) – Fern Hill, Dublin (H21) 26.vi.86 – KGMB

E. haworthi Bradl. – Curraghbinny, (H4) 20.iv.86 – KGMB

E. sangii (Wood) – Ballyduff (H6) larva 23.v.86 – KGMB

NEPTICULIDAE

Bohemannia auriciliella (Joann.) (= *bradfordi* Emmet) – Southampton (11) 11.vii.37, a second British specimen – *Ent. Gaz.* **37**: 207; possibly feeding on birch – *Ent. Gaz.* **38**: 116

Etainia sphendamni (Her.) – Highgate Wood (21) '86 – M. J. Hammerson per CWP

E. argyropeza (Zell.) – Dinis (H2) bred from leaf litter of *Populus tremula* 15-17.v.86 – KGMB

Ectoedemia angulifasciella (Stt.) – Ross Island (H2) mines on *Rosa* spp. 16.x.86 – KGMB

E. pulverosella (Stt.) – Gortmore (H10) mines on *Malus sylvestris* 19.ix.86 – KGMB

Trifurcula griseella Wolff – Llandudno (49) 18.vi.86 – JRL

T. cryptella (Stt.) – Nether Whitacre (38) mines on *Lotus uliginosus* 2.viii.86 – JR

Stigmella speciosa (Frey) – Warwicks (38) '82 – '86 – JR

S. assimilella (Zell.) – Havant Thicket (11) vacated mines 26.x.86 – JRL

S. paradoxa (Frey) – Wychwood Forest (23) vacated mine on *Crataegus* vii.86 – PHS

S. atricapitella (Haw.) – Wickham (11) mines on *Castanea sativa* 26.vii.86, moth bred – JRL

S. catharticella (Stt.) – Gortmore, N. Tipperary (H10) vacated mines on *Rhamnus* 19.ix.86, Clorhane (H18) vacated mines on *Rhamnus* 19.ix.86 – KGMB

S. confusella (Wood) – Whixall Moss (40) mines 31.vii.86 – JRL

OPOSTEGIDAE

Opostega crepusculella Zell. – Packington (38) 2.vii.85 – JR

INCURVARIIDAE

Lampronia luzella (Hb.) – Moor Copse N.R. (22) 21.vi.86 – BRB

Nematopogon metaxella (Hb.) – Fota (H5) eight 12-28.vi.86 – KGMB

Adela croesella (Scop.) – Colchester (19) vi.86 – B. Goodey per AME, Bartlow Hills (19) K. Barton per AME; Westmoor (5) 24.vi.86 – MP; Stockton Down (8) & Baverstock (8) 14.vi.86 – SMP

HELIOZELIDAE

Heliozela hammoniella Sorh. – Whixall Moss (40) mines 31.vii.86 – JRL

Antispila petryi (Martini) – Stockton (38) mines on *Swida* '85 – JR

PSYCHIDAE

Dahlica triquetrella (Hb.) – Grays Chalk Quarry (18) two cases 10.v.86 – CWP

D. inconspicuella (Stt.) – Tilgate (14) bred iv.86 – JMC-H

Luffia ferchaultella (Steph.) – Whixall Moss (4) one case 31.vii.86 – JRL

TINEIDAE

Psychoides verhuella Brauand – Dinton (8) reared from case of *Phylitis scolopendrium*, em.vi.86 – SMP.

Homosetia sp. – Grays (18) in church 30.ix.86 – DJLA **New to Britain**

Haplotinea insectella (Fabr.) – near Tregwes, Ceredigion, Dyfed (46) 13.vii.86 – ANBS

Nemapogon ruricolella (Staint.) – Monk Wood (37) '85 – ANBS

Triaxomasia caprimulgella (Stt.) – Charlton (17) '77 – '83 – A. A. Allen, *Ent. Rec.* **98**: 253

Tinea pallescentella (Stt.) – Woody Bay (4) 10.vi.86 – JRL; Worcester city (37) – ANBS

T. trinotella Thunb. – near Pantersbridge (2) 15.vi.86 – FHNS

Oinophila v-flava (Haw.) – St. Mary's, Isles of Scilly (1) larvae under bark of *Pittosporum crassifolium* 24 & 25.v.86, em. 16.vi.-3.vii.86 – RJH

LYONETIIDAE

Lyontetia clerkella (Linn.) – Life history details, *Ent. Gaz.* **38**: 27

BUCCULATRICIDAE

Bucculatrix cidarella Zell. – Browndown (11) larvae on *Myrica* 24.viii.86 – JRL

B. thoracella (Thunb.) – Southsea (11) 13.viii.86; Churchill (6) larval feeding 27.ix.86 – JRL etc.; East Ham (18) several bred from Blue tits' next-box '86 – CWP, Dulwich Upper Wood (17) vii.86 – CWP

GRACILLARIIDAE

Caloptilia cuculipennella (Hb.) – Lansallos (2) cones 16.viii.86; Polruan (2) cones 21.ix.86; Prussia Cove cones 31.viii.86 – FHNS

C. robustella Jäckh – Glen Moriston, Inverness-shire (96) bred from leaf litter, em. 29.v.86 – MRY

Parornix carpinella (Frey) – Hamstreet (15) 1. + mines 2.x.86 – JRL & ECP-C; Chalkney Wood, Donyland Wood (19) larvae x.86 – AME; Early stages described – AME, *Ent. Rec.* **99**: 135f

Phyllonorycter dubitella (H.-S.) – Faringdon (22) 1. on *Salix*, em. 6.v.86 – MFVC

P. anderidae (Flet.) – High Beach, Epping Forest (18) 14.vi.86 – CWP per AME

P. schreberella (Fabr.) – Worsbrough Country Park (63) mines x.85, em. iv.86 – HEB

CHOREUTIDAE

Choreutis myllerana (Fabr.) – Lizard (1) 25.vi.86 – FHNS; Leckford (12) 16.viii.86 – DHS

C. pariana (Cl.) – Newtown Common (12) larvae 24.viii.86 – PHS

YPONOMEUTIDAE

Argyresthia dilectella Zell. – Partry (H26) 3.viii.86 **New to Ireland** – ECP-C & JRL

A. ivella (Haw.) – Semley Hill (8) 5.viii.86 – SMP; Coventry (38) 17.v.86 – JR

A. glaucinella Zell. – Killiecrankie RSPB reserve (88) larvae 28.vi.86 – MRY; Semley Hill (8) 5.viii.86 – SMP

Yponomeuta evonymellus (Linn.) – *Ent. Gaz.* **37**: 209

Y. sedella (Treits.) (= *vigintipunctata* (Retz.)) – Lewes (14) 10.viii.86 one at light – AME; = Axminster (3) 10.viii.86 – ECP-C

Kessleria saxifragae (Stt.) – Schiehallion (88) larvae on *Saxifraga aizoides* on limestone pavement on lower slopes 28.vi.86 – MRY

Zelleria hepariella Stt. – Tile Hill (38) reared from larva 6.vii.86 – JR; Kent (15/16) J. Badmin & JMC-H. *Ent. Rec.* **99**: 130

Swammerdamia compunctella H.-S. – Notes about records and larva on *Crataegus* – DJLA, *Ent. Rec.* **99**: 203f

Paraswammerdamia albicapitella (Scharf.) (= *spiniella* (Hb.)) – Clorhane (H18) 12.viii.86 – KGMB

C. subfasciella (Steph.) – Churchill (6) 25.viii.86 indicating a possible second generation – DJLA

Ypsolopha lucella (Fabr.) – Axminster (3) 11.viii.86 – ECP-C

Plutella porrectella (Linn.) – Ballavolley I.o.M. (71) 28.vi.86 – KGMB

Rhigognostis annulatella (Curt.) Tintagel (2) 19.vii.86 – FHNS; Porthtowan (1) 16.vii.70 – RJH via FHNS

R. incarnatella (Staud.) – Braehead (H20) 1.iv.39 B. P. Beirne coll. per KGMB

Eidophasia messingiella (F.v.R.) – Coombe (38) 25.vii.86, Ryton (38) '86 – JR

Acrolepiopsis assectella (Zell.) – Southsea (11) 25.vii, 27.viii, 8.ix.86 – JRL; Saffron Walden (19) 21.viii.86 one at MV light – AME

A. marcidella (Curt.) – Wickham (11) 28.vi.86 – JRL & MSP, *Ent. Gaz.* **38**:123

EPERMENIIDAE

Phaulernis dentella (Zell.) – Sutton Down (8) 25.vi.86 – SMP

Epermenia aequidentella (Hofm) – Kynance Cove (1) larvae mining *Pimpinella saxifraga* 17.ix., em. 7 & 9.x.86 – RJH S. Devon (3) – RJH, *Ent. Rec.* **99**: 134

COLEOPHORIDAE

Metriotes lutarea (Haw.) – Belhus Wood (18) common 19.v.86 – DJLA

Coleophora lutipennella (Zell.) – Fota (H5) 24, 25.vii.86 – KGMB Maybe the first confirmed Irish records of this species

C. prunifoliae Doets – Hayling Is. (11) cases on Prunus 7.vi.86 – ECP-C; Faringdon (22) 22.vii.86 – MFVC

C. spinella (Schr.) (= *cerasivorella* Pack.) – Leckford (12) larvae 16.x.86 – DHS

C. orbitella Zell. – Havant Thicket (11) two larvae 19.x.81 em. v.82 – DHS & PHS

C. frischella (Linn.) – Lewes (14) reared from pupa in seedhead of *Centaurea nigra*, 23.vi.86, not necessarily the foodplant but one recorded by continental authors – AME

C. deauratella L. & Z. – Luska (H10) 7.vii.86, Snugborough (H6) 18.vii.86 – KGMB

C. hemerobiella Scop. – Little Wittenham (22) 1. on Crataegus 21.vi.86, Windson Great Park (22) 1.vi.86 – PHS

C. serpylletorum Her. – Mullion (1) cases 14.vi.86 – JRL, ECP-C & RJH

C. lassella Stdgr – Kynance Cove (1) 13.vi.86 – JRL

C. trochilella (Dup.) – Old Rossington (63) 11.viii.86 – HEB Bosigran (1) 23.vii.86 – RJH

C. therinella Tengst. – Southsea (11) 2.vii & 14.vii.86 – JRL Winchester (11) MV 26.vii.86 – DHS; Buckland Waren (22) 15.vii.86 – MFVC

C. benanderi Kan. – Coventry (38) 30.vi.86 – JR, det K. Sattler

C. adspersella Ben. – Horsea Island (1) 1 case 10.x.86; Southsea (11) 15.vii.86 – JRL

C. sylvaticella Wood – Wood Bay (4) 11.vi.86 – JRL & ECP-C Parracombe (4) 11-12.vi.86 – ECP-C & JRL Dinton (8) case 6.vi.86 on *Luzula sylvatica* – SMP

C. taeniipennella H.-S. – Galtee Mts. (H7) 14.vii.86 – KGMB

ELACHISTIDAE

Perittia obscurepunctella (Stt.) – Perranporth (1) 20.v.86 – FHNS Fota (H5) 29.iv – 1.v.86 – KGMB; Belhus Wood (18) 19.v.86 – DJLA

Stephensia brunnichiella (Linn.) Portsdown (11) tenanted mines 9.xi.86 – JRL & RJH

Elachista regificella Sirc. – Havant Thicket (11) mines on *Luzula pilosa* 13.iv.85; Sparsholt (11) mines 19.iv.86; Nettlebed (23) mines 13.iv.86 – JRL etc.

E. biatomella (Stt.) – Swyncombe Down (22) 3.vii.86 – PHS

E. triatomea (Haw.) – Wombwell Wood (63) 1.vii.86, Swinton (63) 1 3.vii.86 – HEB

E. collitella (Dup.) – Further records – RJBarnett, *Ent. Gaz.* **37**: 240

E. subocellea (Steph.) – Kynance Cove (1) 24.vii.86 – RJH

E. dispunctella (Dup.) – Kynance Cove (1) 13.vi.86 – JRL etc. Traeth-y-Mwnt, Ceredigion, Dyfed (46) – ANBS

E. bedellella (Sirc.) – Portsdown (11) mines 1.v.86 Sutton Down (8) 25.vi.86 – SMP

E. cingillella (H.-S.) – Linton (35) 28.v.82 – JRL, *Ent. Gaz.* **38**: 115

E. bisulcella (Dup.) – Leckford (12) mines 10.vii.86 – JRL & DHS; Moor Copse N.R. (22) 6.ix.86 – BRB; Leckford (12) larvae 9.vii.86 – DHS

Biselachista cinereopunctella (Haw.) – Straloch Braes, Kindrogan (89) 28.vi.86 – MRY **possibly new to Scotland**; Inchydoney (H3) 7.vi.86 – KGMB

B. scirpi (Stt.) – Hayling Island (11) 1. 7.vi.86 – JRL & ECP-C

B. eleochariella (Stt.) – Goss Moor (2) 28.vi.86 – FHNS

B. utonella Frey – Penhale, near Perranporth (1) 15.vii.86 – FHNS

B. albidella (Nyl.) – Cahir (H7) at MV 14.vii.86 – KGMB

Cosmiotes freyerella (Hb.) – Wychwood Forest (23) 27.vii.86 – JRL

C. consortella (Stt.) – Inchydoney (H3) 7.vi.86 – KGMB

OECOPHORIDAE

Schiffermuelleria subaquilea (Stt.) – Kynance Cove (1) 13.vi.86 – JRL, RJH & ECP-C *Ent. Gaz.* **38**: 142

S. tinctella (Hb.) – Savernake Forest (8) at MV 27.vi.86 – PHS

Denisia albimaculea (Haw.) – Southsea (11) 22.vi.86 – JRL

Batia unitella (Hb.) – Shrewsbury (40) 30.vii.86 – JRL; Roche Abbey (63) 25.vii.86 – HEB

Oecophora bractella (Linn.) – Hembury Woods (3) larvae 8.iii.-19.iv. under bark of dead oak, em. 17.iv.-22.v.86 – RJH; Devon, *Ent. Rec.* **99**: 159

Aplota palpella (Haw.) – Savernake Forest (8) 23.viii.86 – PHS, believed to be first record since 1890

Pseudatemelia josephinae (Toll) – Absence of records from Cumbria – N. Birkett, *Ent. Rec.* **99**: 231f

P. flavifrontella ([D. & S.]) – Leigh (37) – ANBS

P. subochreella (Doubl.) – Nebo (50) 20.vi.86, most northerly record – JRL

Depressaria ultimella Stt. – Fota (H5) 2.vi.86 – KGMB

Agonopterix kaekeritziana (Linn.) – Clorhane (H18) at MV 12.viii.86 – KGMB

Ethmia funerella (Fabr.) – East Ham (18) 16.vii.86 – CWP; Baston Fen (53) 18.vii.86 – MP

GELECHIIDAE

Metzneria aprilella (H.-S.) – Dinton (8) 11.vii.86 – SMP

Eulamprotes atrella ([D. & S.]) – Clorhane (H18) 12.viii.86 – KGMB

Monochroa lucidella (Steph.) – Cahir (H7) at MV 14.vii.86 – KGMB

Ptocheuusa paupella (Zell.) – Gwithina (1) 22.vii.86 – RJH; Coventry (38) '86 – JR

Rhyncopacha tetrapunctella (Thunb.) – Straloch Braes, Kindrogan (89) 28.vi.86 – MRY

Athrips mouffetella (Linn.) – Fota (H5) 8.viii.86 – KGMB

Teleiodes scriptella (Hb.) – Leigh (37) – ANBS

Bryotropha umbrosella (Zell.) – Penhale (1) mid vii.86 PNS per FHNS

B. similis (Stt.) – Barregarroo I.o.M. (71) 27.vi.86 – KGMB

B. senectella (Zell.) – Clorhane (H18) 12.viii.86 – KGMB

B. desertella (Dougl.) – Ballaghennie, I.o.M. (71) 27.vi.86 – KGMB

Chionodes fumatella (Dougl.) Druridge Bay, Northumberland (67) 14.viii.86 – MRY

Lita solutella (Zell.) – Kynance Cove (1) 13.vi.86 amongst *Genista pilosa* – JRL, RJH & ECP-C

Scrobipalpa ocellatella (Boyd) – Fota (H5) 15.vii. & 11.x.86 – KGMB

S. atriplicella (F.v.R.) – Hooton Roberts (63) 5.ix.86 – HEB

S. costella (H. & W.) – Fota (H5) several from 1.vi.86 – KGMB; ? Double-brooded – KPB, *Ent. Rec.* **99**: 43

S. stangei (Her.) – Yarmouth, I.o.W. (11) vii.1882 – BMNH coll. per K. Sattler, *Proc.Trans.Br.ent.nat.hist.soc.* **20**: 53 **New to Britain**

Caryocolum alsinella (Zell.) – Larvae feeding on *Cerastium fontanum* as well as *C. semidecandrum* at Hayling Island (11) – DHS, JRL & ECP-C.

C. viscariella (Stt.) – St. Mary's, Isles of Scilly (1) larvae 25 & 26.v.86, St. Martin's (1) 1. 29.v., Kynance Cove (1) 1. 13.vi.86 – RJH; Churchill (6) 7.viii.86 – DJLA

C. fraternella (Dougl.) – Icklingham (26) larvae on *Cerastium arvense* – DJLA

C. tricolorella (Haw.) – Idless Valley, near Truro (1) 6.ix.86 – PNS via FHNS

Syncopacma taeniolella (Zell.) – Clonascra (H18) 12.viii.86 – KGMB

S. cinctella (Cl.) – Golden Grove (H18) 6.vii.86 – KGMB

Oegoconia caradjai P.-G. & Cap. – Boscastle coast path (2) 5.ix.86 – FHNS; Camber (14) 24.vii.85 – MP

BLASTOBASIDAE

Blastobasis decolorella Wals. – Radcliffe Infirmary, Oxford (23) 29.vi.86 – MP

MOMPHIDAE

Mompha terminella (H. & W.) – Kingsbury (38) '84-'86 – JR

M. locupletella ([D. & S.]) – Emer Bog (11) 1. on *Epilobium obscurum* 5.v.86 – JRL & DHS; Finlough (H18) 21.ix.86 – KGMB

M. miscella ([D. & S.])– Sandford Hill, Avon (6) 23.vi.86 – MP

COSMOPTERIGIDAE

Limnaecia phragmitella Stt. – Finlough (H18) pupae in *Typha*, em. 20.ix. 26.ix & 1.x.86 – KGMB

SCYTHRIDIDAE

Scythris crassiuscula (Hb.) (= *fletcherella* Meyr.) – Collins Green (37) – ANBS

TORTRICIDAE

Trachysmia sodaliana (Haw.) – Dinton (8) 28.vi.86 – SMP

Hysterophora maculosana (Haw.) – Groveley Wood (8) 7 & 14.vi.86 – SMP

Phtheochroa rugosana (Hb.) – New England, Peterborough (32) 9.vi.86 – MP

Cochylimorpha straminea (Haw.) – Golden Grove (H18) 19.vi.86 – KGMB

Aethes piercei Obr. – Redwood Bog (H10) 20.vi.86 KGMB; Otmoor (23) a few at dusk 12.vi.86 – PHS

Commophila aeneana (Hb.) – Whitstable (15) 30.vi.86 – M. Crow, *Ent. Rec.* **99**: 134

Cochylis roseana (Haw.) – Owston Wood (63) 9.viii.86 – HEB

C. flaviciliana (Westw.) – Shrewton Folly (8) 16.v.86 – SMP; Bedfordshire (30) – A. M. Riley. *Ent. Rec.* **98**: 230

C. hybridella (Hb.) – Harley (40) 9.viii.86 – JRL & ECP-C

Argyrotaenia ljungiana (Thunb.) – East Ham (18) 18.vii.86 – CWP; (= *pulchellana* (Haw.)) Larva on *Vitis vinifera* – PAS, *Ent. Rec.* **98**: 254-5

Archips podana (Scop.) – Monifieth, Angus (90) 27.vii.86b – MRY

Choristoneura hebenstreitella (Müll.) – East Ham (18) 8.vii.84 – CWP

Cacoecimorpha pronubana (Hb.) – Damage to *Vaccinium corymbosum, Ent. Rec.* **98**: 218

Ptycholomoides aeriferanus (H.-S.) – Leigh (37) – ANBS; Churchill (6) 7.viii.86 – DJLA

Aphelia unitana (Hb.) – Heddon's Mouth (4) 13.vi.83 – RJH; Mauherslieve (H10) at 1150 ft. 6.vii.86 – KGMB; Axminster 28.vi & 1.vii.86 – ECP-C

Adoxophyes privatana (Walk.) sp. gp. – Bred from imported orchids **New to Britain** – RJH, *Ent. Gaz.* **37**: 196

Periclepsis cinctana ([D. & S.]) – Tiree (103), MRY & MWH *Ent. Gaz.* **37**: 199-202

Philedone gernignana ([D. & S.]) – Roydon Common (28) 28.vii.86 – MP

Olindia schumacherana Fabr. – St. Breward (2) 13.vii.86; Newbridge nr. Callington (2) 16.vii.86 – FHNS

Cnephasia conspersana Dougl. – Voltinism in the Inner Hebrides (103) – KPB, *Ent. Rec.* **99**: 45

Spatalistis bifasciana Hb. – near Perranporth (1) 14.vii.86; Newbridge (2) 16.vii.86 – FHNS

Acleris sparsana ([D. & S.]) – Bred from spinnings on *Acer campestre* collected from Teg Down (11) 1.viii.86 – DHS

A. lorquiniana (Dup.) – S. Devon (3) – P. J. Baker, *Ent. Rec.* **99**: 134

Olethreutes bifasciana (Haw.) – Fota (H5) 25.vi.86 – KGMB

O. arcuella (Cl.) – Five Lords, Quantocks (5) not uncommon 24.vi.86 – MP

Pseudosciaphila branderiana (Linn.) – The Slade (22) 12.vii.86 – PHS per BRB

Apotomis semifasciana (Haw.) – Owston Wood (63) 9.viii.86 – HEB

A. lineana ([D. & S.]) – Waltham Abbey (19) 17.vii.86 – CWP

Endothenia pullana (Haw.) – Leckford (12) 9.vii.86 – DHS

E. nigricostana (Haw.) – Denaby Ings (63) 27.vi.86 – HEB

Eudemis porphyrana (Hb.) – Wychwood Forest (23) larvae on *Malus sylvestris* – DHS, Oxford (23) 8.vi.86, – Appleton Lower Common (22) – DHS; Lower Common (22) 6.vii.86 – MP

Epinotia fraternana (Haw.) – East Ham (18) 2.vii.86 – CWP

E. rubiginosana (H.-S.) – Greno Wood, Sheffield (63) 22.vii.86 – HEB

Pelochrista caecimaculana (Hb.) – Portsdown (11) 13.vii.86 – JRL

Eucosma pauperana (Dup.) – near Moulsford (22) bred 2.vi.84 – JMC-H, an apparent extension of its known range
E. obumbratana (L. & Z.) – Leigh (37) – ANBS
Clavigesta purdeyi (Durr.) – Buckland Warren (22) 12.viii.86 – MFVC
Rhyacionia pinivorana (L. & Z.) – Cahir (H7) two at MV 14.vii.86 – KGMB
Petrova resinella (Linn.) – Larvae feeding on *Pinus contortus* and *P. sylvestris* trees of height 30 ft. or more. Usually thought to be restricted to *P. sylvestris* of 15 ft. or less – MRY
Eucosmomorpha albersana (Hb.) – Axminster (3) 27.vi.86 – ECP-C
Pammene obscurana (Steph.) – Axminster (3) 15.vi.86 – ECP-C; Emer Bog (11) 29.v.86 – DHS
P. ignorata Kuzn. – Axminster (3) 23.vi.86 **New to Britain** – ECP-C *Ent. Gaz.* **39**: 40
P. suspectana (L. & Z.) – Dry Sandford (22) 24.vi.86
P. aurantiana (Staint.) – Leigh (37) – ANBS; Churchill (6) 31.vii.86 – DJLA
P. ochsenheimeriana (L. & Z.) – near Callington (2) 16.vi.86 – A. Spalding per FHNS
Cydia splendana (Hb.) – Derrycunihy Wood (H2) 5.ix.86 – KGMB
C. conicolana (Heyl.) – Saffron Walden (19) 16.vi.86 one at MV light – AME
C. gallicana (Guenee) – Clorhane (H18) 12.viii.86 – KGMB
Dichrorampha flavidorsana Knaggs – near Tintagel (2) many 20.viii.86 – FHNS
D. plumbana (Scop.) – Six-mile Point (H20) 14.vi.86 – KGMB
D. sedatana Busck – Six-mile Point (H20) 14.vi.86 – KGMB
D. aeratana P. & M. – Ellenglaze near Holywell Bay (1) 3.vii.86 – FHNS

PYRALIDAE

Calamatropha paludella (Hb.) – Bassenhally Pits (29) 17.vii.86 – MP
Crambus uliginosellus (Zell.) – Hartlebury Common (37) – ANBS
Thisanotia chrysonuchella (Scop.) – Frys Hill (6) 25.vi.86 – MP
Platytes alpinella (Hb.) – Saffron Waldon (19) 12.viii.86 – AME
Schoenobius gigantella ([D. & S.]) – Foxhole Heath (26) 2.vii.86 – MP
Donacaula mucronellus ([D. & S.]) – Ballavolley, I.o.M. (71) 28.vi.86 – KGMB
Scoparia ambigualis (Treits.) – larva on rootstocks of Valerian – KPB, *Ent. Rec.* **99**: 40f.
Eudonia delunella (Stt.) (= *resinella* (Linn.)) – Newbridge, near Callington (2) 16.vii.86 several – FHNS
Evergestis extimalis (Scop.) – Southsea (11) 19.vii.86 – JRL

Pyrausta cingulata (Linn.) – Near Trinafour (88) 28.vi.86 – MRY

Sitochroa palealis ([D. & S.]) – Kent (15/16) 21.viii.85 etc. *Ent. Rec.* **98**: 256f & **99**: 130

Eurrhypara perlucidalis (Hb.) – Baston Fen (53) 18.vii.86 – MP

Anania verbascalis ([D. & S.]) – Weather Heath (26) 9.vii.86 – MP

A. stachydalis (Germ.) – Axminster (3) 3.vii.86 – ECP-C

Antigastra catalaunalis (Dup.) – Walberton (13) 12.x.85 – J. Radford per JMC-H, *Ent. Rec.* **98**: 251

Diasemiopsis ramburialis (Dup.) – S. Devon (3) – RJH, *Ent. Rec.* **99**: *134*

Leucinodes vagans (Tutt) – N. W. Lear, *Ent. Gaz.* **37**: 197

Hypsopygia costalis (Fabr.) – Late records – I. D. Ferguson, *Ent. Rec.* **99**: 85

Orthopygia glaucinalis (Linn.) – Late records – I. D. Ferguson, *Ent. Rec.* **99**: 85

Galleria mellonella (Linn.) – Southsea (11) 9.viii.86 – JRL

Paralipsa gularis (Zell.) – Plympton (3) ex 1. 5-10.ix.85 from mixture of sunflower seeds, peanuts and sweetcorn – RJH

Cryptoblabes bistriga (Haw.) – The Slade (22) 12.vii.86, Longmoor (22) 28.vi.86 – BRB; Killahaley Wood (H6) at MV 18.vii.86 – KGMB

Pempelia formosa (Haw.) – Leigh (37) – ANBS

Metriostola betulae (Goeze) – Axminster 29.vi.86 – ECP-C

Dioryctria ssp. – Windsor, *Ent. Rec.* **99**: 160; Notes on biology, – DHS, *Ent. Rec.* **99**: 228f

D. schuetzeella Fuchs – Good Easter (19) 14.viii.84, Saffron Waldon (19) 30.vii.85 & 3.vii.86 all at MV light – AME; Monks Eleigh (26) 7.viii.86 – A. Watcher, *Ent. Rec.* **99**: 41. This species seems to be quickly extending its range from Kent where it was discovered only two years ago.

Assara terebrella Zinck. – Unhill Wood (22) 26.vi.86 – BRB

Nephopterix angustella (Hb.) – Dinton (8) 30.ix.86 – SMP

Ephestia parasitella Stdgr – Longmoor (22) 28.vi.86 – BRB

Plodia interpunctella Hb. – Perranporth (2) – FHNS

Phycitodes saxicola (Vaugh.) – Bedfordshire (30) – A. M. Riley, *Ent. Rec.* **98**: 230

PTEROPHORIDAE

Oxyptilus parvidactylus (Haw.) – Coolbaun (H10) 7.vii.86 – KGMB

Oxyptilus laetus Zell. – Perranporth (1) 2.vii.86 – PNS per FHNS

Pterophorus fuscolimbatus Dup. – near Coverack, Lizard (1) 8.vii.86 many – FHNS; Coverack (1) larvae on *Thymus* 14.vi.86 em.

30.vi. – 2.vii.86, life history not previously known in Britain. Kynance Cove (1) 24.vii.86 – RJH

P. galactodactyla ([D. & S.]) – Lincs. (54) C. C. Penney, *Ent. Rec.* **99**: 182

Leioptilus carphodactyla (Hb.) – Chinnor Hill (23) pupa on *Inula conyza*, em. 29.ix.86 – MFVC

ATHETA SYLVICOLA KRAATZ (COL.: STAPHYLINIDAE) FROM TWO SITES IN SCOTLAND. – I swept a female of this species from grass in a marshy spot near Grudie, E. Ross on 3.vi.82 and captured a male from under a small stone on a shingle bank of the river Druie near the village of Inverdruie, Easterness on 30.ix.85.

This species appears to be rare in Britain. It was introduced to the British list, under the name *Oxypoda planipennis* Thoms, by Ashe (1955, *Entomologist's mon. Mag.* **91** 248), who found a single example in a heap of garden refuse at Nethy Bridge, Easterness but I have found no other published record for it. My friend Mr. A. A. Allen tells me, however, that the late Philip Harwood took specimens in Speyside.

After Ashe had published his note, the beetle was transferred from the genus *Oxypoda* to the genus *Atheta* (subgenus *Acrotona*). In addition, the specific name *planipennis* was shown to be invalid and the name *sylvicola* Kraatz adopted. The specific name *silvicola* Kraatz has also been used but Pope (1977 in *Kloet and Hincks: A Check List of British Insects.* 2nd Edition Part 3 Coleoptera and Strepsiptera) states that this is a misspelling. It should be noted that *Atheta sylvicola* Kraatz is to be distinguished from *Atheta silvicola* Fuss, which has long been regarded as a synonym of *A. hypnorum* Kiesenwetter.

The few available observations would seem inadequate to define the habitat of the beetle in Scotland but they are at least in agreement with what is recorded for the species in Sweden by Palm who states (1970 in *Svensk Insektfauna* 9 Coleoptera Fam. Staphylinidae pt. 6 p286) that the beetle occurs in rotten vegetation and fungi and also under stones on sand or gravel banks.

I thank Mr. P. M. Hammond for help in identifying these two specimens. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU

A MIGRATION OF *CYNTHIA CARDUI* L. (LEP.: NYMPHALIDAE) IN PORTUGAL

By TORBEN B. LARSEN*

During a visit to Portugal from 10-20 April of 1988 *Cynthia cardui* was regularly observed (Alentejo, Lisbon, Estremadura, Beira Baxia and Ribatejo) during the all too few periods when the sun broke through. There was an apparent northward bias in travelling specimens, but inficient specimens were seen to be certain of this.

On the morning of the 20th April at the foot of the Monchique mountains in the Algarve the weather was fine. Large numbers of *Cynthia cardui* were seen basking and feeding at 10.00hrs. Gradually a very definite northwards movement developed (350°) and by 11.00 hrs. half a dozen specimens were crossing a fifty metre front every minute. Some specimens remained feeding and basking without joining the flight.

Later that day and during the two following days it was possible to establish that similar conditions ruled throughout the Algarve from Portimao to the Spanish border. The northwards migration was always most obvious when the weather was hot and sunny. Wind conditions varied considerably during the three days in question, without causing noticeable changes in direction. The direction of the migrants was verified by compass on several occasions. Their ground speed was about 30 km per hour.

The specimens were mostly somewhat worn, indicating that they had flown about for several days. Very few appeared to be freshly hatched. No case of copula or overt sexual behaviour was observed, nor was ovipositing. Despite regular sampling of patches of *Carduus* and *Malva* no evidence was found of mass breeding though occasional half grown larvae or abandoned larval tents were found. Because of their tent building habits, mass breeding of the species is usually easy to detect.

It therefore seemed likely that the origin of the specimens was North Africa. However, regular observations on the coast yielded no observations of migrants coming in from the sea. Subsequent study of a map solved this problem. If they were from North Africa, the heading indicated that they came from the level of Casablanca, a distance of about 400 km over water. This would take about 13 hours to cover, ensuring that all arrivals would be during the night. This would also explain how a continued northward migration did not appear to deplete a population of mainly worn specimens. Thus, although not conclusively proven, a Moroccan origin of the specimens is indicated.

The course of 350° leads towards Ireland. If the migrants were to have continued beyond the Iberian Peninsula, some members should have arrived in Ireland and the United Kingdom during the last week of April. Early records of *Cynthia cardui* in 1988 would almost certainly be linked to the event observed, since breeding further north in Europe could not have taken place sufficiently early in the year to provide a source.

*Snoghoj alle 29C, 2770 Kastrup, Denmark.

MIGRANT LEPIDOPTERA IN MOROCCO – On 8.iii.1988, at Marrakech, Morocco, between 1630 and 1800 hrs. I observed a steady stream of *Cynthia cardui* L. (the painted lady) flying northwards through the gardens of a hotel – even a seven-storey hotel did not delay them – the butterflies flew over it! The next day, whilst in the Atlas Mountains, there were many more *cardui* flying north, this time between noon and 1400 hours.

At Agadir, on 14.3.88 I was pleased to see around 12 striped-hawkmoths (*Hyles livornica* Esp.) feeding in warm sunshine on the yellow flowers of an unknown shrub and at the flowers of *Bougainvillaea* along the main avenues of the town. Brig. E. C. L. SIMSON, 4 Plowden Parks, Aston Rowant, Oxford.

PARALIPSA GULARIS (ZELL) (LEP.: PYRALIDAE) IN DEVON – In September 1986 I bred several *Paralipsa gularis* from a mixture of sunflower seeds, peanuts and sweetcorn which had been bought in August 1986 at a pet food shop in Plympton, Plymouth for my daughters' gerbils. Enquiries revealed that the food came to the shop already bagged from a warehouse in Bristol and that for the last few years larvae had been noticed in the shop amongst this food during the summer.

Goater ([1986] *British Pyralid Moths A Guide to their Identification*: 102) states that the species is known only from dried-fruit warehouses in London but probably occurs elsewhere if sought. The only record of which I am aware outside London is that of a dead specimen sent to Mr. H. N. Michaelis by a grocer in Flint in 1981 (Michaelis, H. N., 1986. Species of Pyralidae and Pterophoridae (Lep.) in North Wales. *Entomologist's Rec. J. Var.* **98**:236). R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.

FURTHER NOTES ON HYALOMYODES (DIPT.: TACHINIDAE) – Since writing my recent paper (*Ent. Rec.* **100**: 55-57) on this endoparasitoid of Tetrigoidea (Orthoptera), the following publication dealing with the Diptera parasitising Orthoptera has come to my notice: Leonide, J. & Leonide, J. C. (1986) *Les Diptères sarcophagidés endoparasites des Orthoptères francais – essai biotaxonomique.* Aix-en-Provence; Universite de Provence: ii+303pp.

The authors indicate that they had dissected nearly 750 Tetrigidae, including 69 *Tetrix subulata,* without recording a sarcophagid (or presumably any other) endoparasite in these insects, thus confirming that the latter are indeed uncommon in Tetrogoidea. D. K. McE.KEVAN 20 Woodridge Crescent, Beaconsfield, P. Q., Canada H9W 4G7.

SOME BUTTERFLIES FROM TURKISH ASIA MINOR

By D. W. BALDOCK* and R. F. BRETHERTON**

From August 6th to 11th 1986, DWB spent a holiday at Bodrum, in the province of Mugla, south west Turkey. This was the site of the ancient city of Halicarnassos, placed on a narrow peninsula which juts far out into the Aegean Sea. 23 species of butterfly were recorded in or within a ten mile radius of Bodrum. The species marked with an asterisk in the following list were brought home for checking and discussion with RFB:

**Papilio machaon* L., common in villages. *Iphiclides podalirius* L., *Pieris brassicae* L., **P. rapae* L. also fairly common. *Pontia daplidice* L., a few at Turkbuku. *Colias croceus* Fourc., a few only. A probable, but as yet unconfirmed **Cigaritis cilissa* Led. f. *minima* Staud., one male, Turkbuku, wingspan 10mm, closely resembling *C. siphax* Lucas from Tunisia. **Thersamonia thersamon* Esp., common, especially males. **Lampides boeticus* L., very common. **Celastrina argiolus* L. f. *paraleuca* Rober., very common in both sexes. **Polyommatus icarus* Rott. f. *zelleri* Ver., very common. *Charaxes jasius* L., two at Bodrum castle, one at Turkbuku. *Limenitis reducta* Staud., one at Turkbuku. *Cynthia cardui* L., a few only. *Hipparchia syriaca* Fruh., one seen in pine woods near Milos. **Hippachia mersina* Staud., one male near Bodrum, very worn, two seen amongst pines near Milos. **Maniola telmassia* Zell., common; of four females brought home, one is small (wingspan 21 mm.), and three large (25-26mm.), which were originally thought to be *M. jurtina*, in which both sexes are usually large. All agree closely in appearance with the females in a long series of *M. telmessia* taken on the nearby island of Rhodes, in which males are all small, but females show a similar variation in size. Although the male genitalia of the two species differ considerably, those of the female appear inseparable. *M. telmessia* alone has been previously reported from Mudra province, and the two species are not known to be sympatric in Turkey, although Thomson (1969) says that *M. jurtina telmessiaeformis* Ver., whose genitalia (?male) differ from those of *M. telmessia,* certainly occurs in the part of Asia Minor that is opposite Cyprus. **Hyponephele lupina* Costa *rhamnusia* Freyer., Turkbuku, one fine male. **Lasiommata megera* L., common. **Kirinia roxelana* Cramer, Turkbuku, very common. *Syrrichrus proto* Ochs., common. **Carcharodus alcaea* Esp., common.

*10 Oxted Green, Milford, Godalming, Surrey.
**Folly Hill, Birtley Green, Bramley, Guildford, Surrey.

The Lepidoptera of this part of the Turkish Aegean cost appear to be little known. Higgins (1966) mentions only ten species from the province of Mugla, although others which are present there may be included among the species he describes as widely distributed or generally common and for which he does not give numbered provinces. Leestmanns (1986) in an exhaustive account of spring time collecting in Turkey by himself and others, with a fine bibliography, refers only to nine species seen during visits to Yaniker, which is further south in Mudra province than Bodrum. Our own list, compiled in August, include nine species previously unrecorded, and not covered by Higgin's "well distributed and common" category. These are *P. machaon, C. cilissa* (subject to final confirmation), *C. jasius, L. reducta, H. syriaca, H. mersina, H. lupina rhamnusia, K. roxelana* and *S. proto*. The province is clearly worth further exploration.

References

Thomson, G., (1969) *Maniola jurtina* and its forms. *Entomologist's Rec. J. Var.* **81**:90.

Higgins, L. G. (1966) Check-list of Turkish butterflies *Entomologist* **99**:209-228.

Leestmans, R. Mottet, Ph., Verhulst, J., Carbonell, F. (1986). Contribution à la connaissance de la fauna printinière der Lepidopteres de Sud de l'Asie Mineure. *Linneana Belgica* **8**(X): 338-381.

AN EARLY (OR LATE ?) RED ADMIRAL – On 15th January 1988, in a wood north of Plymouth, Devon, I watched a female red admiral (*Vanessa atalanta* L.) flying and basking in the sun. A. ARCHER-LOCK 4 Glenwood Road, Plymouth, Devon.

PHLYCTAENIA PERLUCIDALIS HBN. (LEP.: PYRALIDAE) IN WILTSHIRE – This species was recorded at m.v. light at Dinton, Wiltshire (v.c.8) on 4.vii.1987. This appears to be a new county record and perhaps indicates a further expansion in the range of this species. S. PALMER. The Warren, Hindon Road, Dinton, Wiltshire.

A NEW INSECT REPELLENT – we have received a press release announcing a new product called Mosquito Milk. Originally designed as a repellent against malaria-carrying mosquitos and the sandfly vector of Leishmaniasis, it will shortly be available in the UK, supplied in a roll-on applicator.

The product is claimed to be non-toxic, being derived from extracts of plant oils. It is said to work by affecting the infra-red sensors of insects, preventing them from constructing a heat-image of their prey. PAUL SOKOLOFF

HAZEL AS AN IMPORTANT LARVAL FOODPLANT OF THE BARRED UMBER *PLAGODIS PULVERARIA* L. (LEP.: GEOMETRIDAE)

By P. WARING*

During the course of three years work on the lepidopterous larvae on understorey and scrub species in Bernwood Forest on the Bucks/Oxon border I have come to the conclusion that hazel is the most important larval host plant in the Forest for the barred umber, *Plagodis pulveraria* L. This is of interest as Skinner (1984) gives only sallow and birch as the host plants. Going back through the literature South (1961) gives "birch, sallow, ash etc", Newman & Leeds (1913) give sallow only and at the other extreme Barrett (1901) and Allan (1949) both give birch, sallow, oak, hazel, ash and wild cherry, with Barrett's order (as given) possibly indicating the order of preference.

The barred umber was regularly trapped in both the Oxfordshire (Waterperry Wood) and Bucks (Oakley Wood) parts of the Forest, where it was mainly associated with the unplanted areas that retain hazel. It was less frequent in the conifer plantations although birch was the most common native woody perennial amongst the conifers and was abundant in some places. The moth was never numerous at traps but was easy to beat as a larva in late July and August. The accompanying table shows the frequency of barred umber larvae and of all macrolepidopterous larvae on the three commonest shrubby species at six sites within Bernwood Forest. Each sample was obtained by beating the chosen shrubby species in 60 separate spots. At each spot a Bignall beating tray (area 1.02m) was placed such that it was covered by foliage and all foliage within the range of a 1 metre-long beating-stick was jarred sharply five times. The samples thus represent the number of larvae in a standard volume of space occupied by the shrub, this being the best way of comparing which shrubs give best value in terms of the number of larvae they support. White (1975) has shown that beating approaches 100% collection of larvae if done in calm, dry conditions.

Table 1 shows that the larvae of the barred umber occur at a low density of approximately 2 per 60 m^3 of hazel bush but are notably more common on hazel than on birch or hawthorn. Although no larvae occurred in the birch samples in 1986 one was found and reared on birch in August 1985. Sallow was not common enough in the wood to provide the sample sizes required for Table 1.

Note that the densities of total macro-lepidopterous larvae on birch in August are notably higher than for hawthorn or hazel.

*Nature Conservancy Coucil, Northminster House, Peterborough.

This is largely due to the presence of the common white wave, *Cabera pusaria*, which is very common on birch at this time of year.

		Sites in Bernwood Forest					
		A	B	C	D	E	F
HAZEL	Total Number of Macrolepidopterous Larvae in sample T	21	45	21	17	18	25
	Number of larvae of Barred Umber in sample B	1	0	3	3	1	2
HAWTHORN	T	28	18	20	18	20	21
	B	1	1	0	0	0	0
BIRCH	T	83	105	91	74	46	53
	B	0	0	0	0	0	0

Table 1. A comparison of the numbers of Barred Umber larvae, B, and total number of Macrolepidopterous larvae, T, in samples of hazel, hawthorn and birch at six sites in Bernwood Forest. All samples were taken between 10-20 August at which point the Barred Umber larvae were nearing full growth.

References

Allan, P. B. M. 1949. *Larval foodplants.* Watkins and Doncaster. Kent.

Barrett, C. G. 1901. *The Lepidoptera of the British Isles.* Vol. 7. Reeve. London.

Newman, L. W. and Leeds, H. A. 1913. *Text book of British butterflies and moths.* Gibbs and Bamforth. St. Albans.

Skinner, B., 1984. *Colour identification guide to the moths of the British Isles,*Viking. Middx.

South, R. 1961. *The moths of the British Isles.* Series II. Warne. London.

White, T. C. R. 1975. A quantitative method of beating for sampling larvae of *Selidosema suavis* (Lepidoptera: Geometridae) in plantations in New Zealand. *Can. Ent.* **107**: 403-12.

THE SUBSPECIES OF *ACRAEA JOHNSTONI* GODMAN (LEP.: NYMPHALIDAE)

By D. L. HANCOCK* and A. HEATH**

Abstract

Three subspecies of *Acraea johnstoni* Godman are recognized; the typical one, *A. j. toruna* Grose-Smith (= *butleri* Eltringham, nec Aurivillius) and *A. j. praelongata* stat. nov. The latter subspecies was described originally as a female form of *johnstoni* by Joicey & Talbot; the male and a second female form are described and illustrated here.

Introduction

The various forms attributable to *Acraea johnstoni* have been discussed by Eltringham (1911, 1912) and Carpenter (1932) but to this day only two subspecies have been accepted. These are generally known by the names *johnstoni* Godman and *butleri* Aurivillius.

Recent material from the Mwinilunga district of NW Zambia, and illustrations by Berger (1981) of specimens from SE Zaire, however, show that these populations represent a third subspecies. The name *praelongata*, originally used by Joicey & Talbot (1927) for a female form from SE Zaire, and further discussed by Carpenter (1932), may be applied to this subspecies and thus is raised here to the level of a species-group name.

The name *butleri* was also proposed originally as an infrasubspecific one (Aurivillius, 1899) and was not used at the level of a species-group name until Eltringham (1912) accorded it subspecific status. Accordingly, under the rules of Article 10c of the International Code of Zoological Nomenclature (1985 edition), it falls as a junior synonym to the name *toruna* Grose-Smith, as originally placed by Eltringham (1911).

The taxonomy of these subspecies is outlined below.

Systematics

Acraea johnstoni johnstoni Godman

Acraea johnstoni Godman, 1885, *Proc. zool. Soc. Lond.* 1885: 537.
Type-locality Kilimanjaro, Tanzania.

* 5 Northampton Crescent, Hillcrest, Bulawayo, Zimbabwe.
**209 Ringwood Drive, Pinelands, 7405, South Africa.

The synonymy and forms of this subspecies have been dealt with adequately by Eltringham (1911, 1912) and Carpenter (1932). The subspecies ranges from S. Sudan and N. Uganda to Mozambique and E. Zimbabwe. The orange forms are lacking from these extremes of distribtution and form *johnstoni* has not been recorded from Malawi, NE Zambia or extreme S. Tanzania, whilst yellow and white forms occur throughout.

Acraea johnstoni toruna Grose-Smith

Acraea lycoa Female ab. *butleri* Aurivillius, 1899, *K. svenska Vetensk-Akad. Handl.* **31**(5): 115. Type-locality Ruwenzori. (Infrasubspecific name).
Acraea toruna Grose-Smith, 1900, *Novit. zool.* 7: 546. Type-locality Toro, Uganda.
Acraea johnstoni toruna Grose-Smith; Eltringham, 1911: 15.
Acraea johnstoni butleri Eltringham (*nec* Aurivillius), 1912, *Trans ent. Soc. Lond.* 1912: 341. (Raised from ab.).
Acraea butleri Eltringham; Aurivillius, 1913: 250.

This subspecies occurs in SW Uganda, Rwanda and the Ituri and Kivu districts of NE Zaire. The various forms were illustrated by Berger (1981). This subspecies has the subapical band on the forewing broad and the palpi black. The specimens placed "near f. *praelongata*" by Carpenter (1932) belong here.

Acraea johnstoni praelongata stat. nov. (Fig. 1)

Acraea johnstoni female f. *praelongata* Joicey & Talbot, 1927, *Encycl. Ent.* (B) 2(1): 13: Type-locality S. Lufonso R., Lake Mweru district, SE Zaire. (Infrasubspecific name).

This subspecies, known from NW Zambia and SE Zaire, is distinguishable from the others by the combination of a relatively narrow subapical band and large elongate spot in space 2 of the forewing, the indistinct and diffuse margin to the hindwing basal patch, and the ventrally yellow palpi.

Both sexes are known from very few specimens but all known males have the wings brown with primrose-yellow pale areas on both fore and hind wings. (See Berger (1981) for a coloured illustration). The female is larger than the male and so far two colour forms are known. Typical female f. *praelongata* is known from SE Zaire and has the hindwing patch yellow, the forewing spots white. This also was illustrated by Berger (1981). A second female form has the pale areas of both fore and hind wings white and is known from the Mwinilunga district of NW Zambia. It is described below.

Fig. 1. *Acraea johnstoni praelongata* stat. nov.: male (left) and holotype of female form *albimaculosa* nov. (right), from N.W. Zambia. (Scale bar = 1cm.)

female form *albimaculosa* nov.

Similar to female form *praelongata* as described by Joicey & Talbot (1927) but wings uniformly brown with all pale markings white. The type is figured here.

Holotype female, Mwinilunga, N. Rhodesia (Zambia), Feb. 1960. Paratypes: 1 female, Mwinilunga, June 1967; 1 female, Kanyita Stream, Mwinilunga, March 1963; 1 female, Hillwood Farm, Ikelenge, 25 March 1977, A. Heath. Holotype and paratype in Natural History Museum, Bulawayo; paratypes in British Museum (Natural History) and A. Heath collection, Cape Town.

In addition to the above, the following males have been examined: 1 male, Sakeji R., Ikelenge, Zambia, March 1957; 1 male, Hillwood Farm, Ikelenge, March 1977, A. Heath.

Acknowledgement

We thank Janet Duff for the photography.

References

Aurivillius, C. 1899. Rhopalocera Aethiopica. *K. svenska Vetensk-Akad. Handl.* **31**(5): 1-561.

Aurivillius, C. 1913. Family Acraeidae. In Seitz, A. (ed.), *The Macrolepidoptera of the World.* **13**. *The African Rhopalocera.* Kernen, Stuttgart, pp. 239-292.

Berger, L. A. 1981. *Les Papillons du Zaire.* Weissenbruch, Bruxelles, 543pp.

Carpenter, G. D. H. 1932. The forms of *Acraea johnstoni* Godm. (Lep.: Nymphalidae), and their distribution. *Trans.ent.Soc. Lond.* **80**: 251-268.

Eltringham, H. 1911. On the forms and geographical distributions of *Acraea lycoa* Godt. and *Acraea johnstoni* Godm. *Trans. ent. Soc. Lond.* 1911: 1-15.

Eltringham, H. 1912. A monograph of the African species of the genus *Acraea* Fab., with a supplement on those of the Oriental Region, *Trans.ent.Soc.Lond.* 1912: 1-374.

Joicey, J. J. & Talbot, G. 1927. New forms of Lepidoptera Rhopalocera. *Encycl. ent. (B) Memoires et notes II Lépidoptères* 2(1): 1-14.

Notes and Observations

EUPITHECIA ABIETARIA (GOEZE), (LEP.: GEOMETRIDAE) – BREEDING IN WALES – In view of the paucity of records of this elusive moth in Britain generally and in Wales in particular it is worth recording that at a meeting of the Lancashire and Cheshire Entomological Society at Worlds End, Clwyd on 6th September 1986 when ten members and friends worked the district consciencìously in inclement weather very little of interest was seen but the penultimate paragraph about the meeting in the Society's Proceedings reads:–

"A walk in the forestry ride on the other side of the road was little more productive but what we at first sign took to be a stand of Sitka spruce was found to have dropped some very large cones in the recent winds and these identified the trees as noble fir (*Abies procera* Rehder), some of the cones showed signs of larval feeding and one that was opened up was found to contain a microlepidopterous larva, to be identified in the fullness of time."

As the larvae appeared to be microlepidoptera, Dr. Mike Hull took a good sample hoping to identify the incumbent but got only a large number of parasites. I took only six cones, mainly for the purpose of checking the identity of the tree. On the 2nd June 1987 a fine male *Eupithecia abietaria* (Goeze) emerged from these.

The status of this species in Britain has not been well understood in recent times and Skinner (Skinner B. *Moths of the British Isles*, 1984) even suggested that it might be extinct as a breeding species and that the odd specimens taken could be the result of accidental importation or immigration. Subsequently, Skinner himself discovered a strong breeding colony in Northumberland. Single specimens have also been taken rather randomly over much of Northern Britain.

I have myself often collected a large number of spruce cones from various localities, including Scotland, the Forest and Wales,

without ever finding the moth and I know that many other collectors have had similar disappointments.

As far as Wales is concerned, Gordon Smith (*Proc. Chester Society of Natural Science, Literature and Art,* 1948) could only find two records of single moths taken in the Northern Counties of Wales covered by his paper, the most recent was at Ial in 1948 by R. E. Vaughan Roberts; this is only about five miles from Worlds End.

There can be no doubt that Norway spruce (*Picea abies* Karsten) is an acceptable food-plant in the wild but one wonders if the larger (and potentially more nourishing?) cones of the noble fir and its close relatives are equally acceptable; I recall a paper by J. H. Styles (*Entomologist* **94**: 88) which reported damage to the cones of silver fir in Hepburn Wood, Northumberland. This locality is about ten miles from Skinner's new locality in the same county. I visited Hepburn Wood some years ago and could find only the odd old silver fir among the plantations of douglas fir and spruce and these had not dropped any cones when I was there. The specific name of the moth now in use does not help us to resolve the question!

The specimen referred to would have been my first encounter with the species but for a fortuitous catch in 1985 when a specimen was found sitting on the outside of my trap in Alderley Edge on the morning of 30th June 1985; the strange thing is that 1984 was one of the few years in which I had not collected cones in my search for this species, it must therefore be regarded as most probably the first in Cheshire as the only other report of its occurrance, in the Wirral some years earlier was never substantiated and no specimen was kept. My specimen was therefore another of those which turn up unexpectedly around the country and I am left wondering if they are breeding thinly on the various ornamental firs growing in parks and gardens. C. I. RUTHERFORD, Longridge, Macclesfield Road, Alderley Edge, Cheshire. SK9 7BL

NEW LEPIDOPTERA RECORDS FOR BRECONSHIRE IN 1986 – Three species of Lepidoptera were caught in the Rothamsted Insect Survey light trap at Lysdinam (Site No. 111, O.S. Grid Ref. SO 009 586) in Breconshire which, so far as I am aware, have not previously been recorded from the county.

Single males of *Eupithecia subumbrata* D. & S. and *E. trisignaria* H.-S. (Geometridae) were caught on 6th and 21st August respectively and their identifications were confirmed by examination of the genitalia. *Schrankia costaestrigalis* Steph. (Nocutidae) was found to be fairly common with five individuals trapped between 27th July and 18th August.

From a survey of the distribution of British Eupitheciini (Riley and Prior, in prep.) and the comments of Heath (1983, *Moths and*

Butterflies of Great Britain and Ireland, Vol. 10 : 393) I understand that none of these species have previously been recorded from any of the three pre-1974 counties (Breconshire, Radnorshire and Montgomeryshire) which constitute the present administrative county of Powys.

Thanks are extended to Dr. F. Slater for operating the trap at Llysdinam. ADRIAN M. RILEY, Entomology and Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, AL5 2JQ.

NOTES FROM THE ISLE OF CANNA – The first fortnight of December 1987 produced a remarkable period of sustained calm, sunny weather in the Hebrides, with high barometric readings. On December 9th, Mrs. W. MacKinnon, of the National Trust, found a red admiral (*Vanessa atalanta* L) fluttering inside one of her windows. *Atalanta* was more numerous on Canna in the autumn of 1987 than for many years; another butterfly unusually common was the speckled wood, *Pararge aegeria* L. In contrast, the small tortoishell, *Aglais urticae* L. was severely reduced in numbers by heavy May showers when the butterfly eggs were hatching, and very few specimens were seen during the year. Of the moths, the winter moth, *Operopthera brumata* L. is now unusually common, with the males being seen regularly at lighted windows. J. L. CAMBELL Isle of Canna, Hebrides.

UROCERUS AUGUR KLUG. (HYM.: SYMPHYTA) NEW TO GUERNSEY – On 23.viii.1987 I was given a large female "horn-tail" very similar to *Urocerus gigas*, but with a second narrow band on the abdomen, and the distal threequarters of the hind femora black. The insect was found alongside a delivered box of groceries on the back doorstep of a cottage in St. Saviours. *U. augur* is a continental species, rarely found on mainland Britain.

My thanks are due to Mr. N. Springate of the British Museum (Natural History) for identifying this insect. R. A. AUSTIN, Maymyo, Les Amballes, St. Peter Port, Guernsey.

Current Literature

Butterflies of the London Area by **Colin W. Plant.** 199pp. many colour illustrations. 42 maps. 190 x 230 mm. Boards. London Natural History Society 1987. £15.95

A brief forward and preface is followed by a detailed chapter describing the history of butterfly recording in the London area. There follows sections on geology, butterfly habitats in London, conservation, collecting, introductions, notes on attracting butterflies to the garden and further reading. The bulk of the book com-

prises a species by species account covering the history, distribution, times of appearance and brief summary of breeding habits. The work concludes with tetrad maps of each species – the unusual size of the book being to accommodate the standard London Natural History Society maps.

The reviewer found the treatment of individual species a little confusing as there is no separation of the text into sub-headings. There are a number of minor errors in the book, and a couple of transpositions of photographs – but the latter are corrected in an adhesive erratum slip. The photographic illustrations are good, although probably unnecessary given the number of illustrated butterfly books currently on the market. This well-produced "local list" is a long overdue up-date of DeWorm's publications in the London Naturalist over 30 years ago. We look forward to a similar treatment of the moths of London. C. C. PENNEY

A bibliography of the Zygaenidae by **W. G. Tremewan.** 192pp. cloth. Harley Books, 1988. £22.50

This work comprises some 2750 bibliographic entries covering all aspects of Zygaenid literature. The entries are alphabetic, by author, each described by one or more key words. The 31 key words used are defined in the introduction, and cover areas such as biology; ecology; genetics; histology; karyology; nomenclature physiology; taxonomy and many more. Entries are indexed by key words.

Although the Zygaenidae comprise only some 120 known species, their unusual biology and attractive appearance has attracted many devotees and a consequently expanding literature. This comprehensive account, current to December 1986, provides an essential resource for all serious students of the Zygaenidae. Published bibliographies often contain errors and transpositions which, although minor in themselves, often make tracing the primary source material very difficult. However, given the meticulous care this author takes with his publications, users of the bibliography can be confident that the information they seek is accurate. PAUL SOKOLOFF.

British Red Data Book 2: Insects. Edited by **D. B. Shirt.** xliv+ 402pp. 18 half-tone illustrations. Boards. Nature Conservancy Council, 1987. £10.00.

This latest of the Red Data Book series begins by describing the production of a Red Data Book, gives a code for insect collecting, notes on legislation to protect insects, recording schemes and other useful information. There follows an illustrated synopsis of habitat types, definitions of criteria for listing, and summary of species by category. The bulk of the work comprises an individual treatment of each species under the headings : identification; distribution;

habitat and ecology; status; threats; conservation and the name of the author of the treatment. The work concludes with an extensive bibliography and index to species.

As with previous Red Data Books, this volume is packed with information and takes a pragmatic view of conservation. It rightly recognises that collecting poses a threat to only a small group of insect species, the main threats coming from intensive agriculture, modern conifer forestry, aquatic pollution, building development, destruction of heathland, bog, saltmarsh and so many other habitats. It also draws attention to the problem of "tidy" management strategies, where, for example, fallen wood is put to the torch, and untidy vegetation trimmed.

Highly recommended reading, for a most reasonable price. PAUL SOKOLOFF.

Longhorn Beetles of the British Isles by **N. Hickin.** 24pp. 15 photographs in colour, 1 colour plate, 20 line drawings. Shire Natural History series, Aylesbury, Bucks., £1.25.

Dr. Hickin has spent a lifetime studying wood-boring insects on which he has written a number of authoritative books. This booklet provides a good introduction to the structure, metamorphosis and ecology of Longhorn beetles, the biology of wood, together with some excellent hints on the rearing of Cerambycid larvae and the creation of conservation habitats. There are excellent photographs by Dr. S. Cymorek, a well-produced colour plate (unfortunately depicting some species foreign to this country) and many clear black and white figures. Perhaps too much space has been given to adventive species at the expense of a number of our indigenous Longhorns – the genera *Obrium, Grammoptera, Alosterna, Leptura* and some Lamiidae – an oversight which is to be regretted. The list of British species (p.22) is out-of-date: for example, *Phymatodes lividus* only occurred in imported French wine casks many years ago; *Plagionotus arcuatus*, a very doubtful 'native', is solely present here in infested foreign timber; our two *Cerambyx* species are extinct, although *C. cerdo* was re-discovered as a semi-fossil in bog oak at Isleham, Ely, some two decades ago. Nor should the list retain the five species of *Monochamus*, all of which are introductions. Nomenclature contains some errors: *Criocephalus* is now *Arhopalus* – incidentally, *A. (Criocephalus) rusticus* is far from being exclusive to eastern Scotland; *Stenostola ferrea* is our *S. dubia*. These are, however, inaccuracies which in no way spoil what is an excellent little work at a very modest price. It is recommended as a complement to the late E. A. J. Duffy's Handbook on Cerambycidae, published by the Royal Entomological Society and at present out-of-print. RAYMOND R. UHTHOFF-KAUFMANN

TO OUR CONTRIBUTORS

ALL MATERIAL FOR THE TEXT of the magazine as well as books for review must be sent to the EDITOR at 4 Steep Close, Orpington, Kent BR6 6DS.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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SPECIAL NOTICE. – The Editor would be willing to consider the purchase of a limited number of certain back issues.

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EDITORIAL

With this issue, we are pleased to welcome our new printers, Cravitz Printing Company Ltd. For the sake of continuity we have tried to keep the typeface and layout uniform with the first three issues of the current volume. We shall be adopting a metric format from the beginning of volume 101.

A number of readers have expressed surprise that the issue of volume 100 has proceeded thus far without editorial comment or other celebration. By way of explanation, although 100 volumes have been issued, the Journal is but a youthful 98 years of age — volume one was issued on April 15th 1890. In the early days our founder, J.W. Tutt, issued more volumes than there were calendar years. Whether this productivity flowed from enthusiasm or perversity remains unclear. If the seasons are propitious we propose to celebrate our centenary in 1990.

Remaining on the theme of celebration, we would take this opportunity to welcome the return of *The Entomologist*. This longest-running of British entomological periodicals was first issued in 1840; although 22 years elapsed between the publication of volume one and volume two, a total of 106 volumes were published until the demise of the journal in December 1973. The Royal Entomological Society of London have resurrected the title — or more correctly, taken over from the British Trust for Entomology — and plan to issue volume 107, under the editorship of Dr Hugh Loxdale, in July this year.

Fellows of the Royal Entomological Society will receive *The Entomologist* free for the first year of issue, but a complimentary copy will be sent to anyone on application to the Registrar, Royal Entomological Society, 41 Queen's Gate, London SW7 5HU. Please enclose an A5 stamped, addressed envelope. A complimentary copy of the second issue will also be sent to those who have entered a subscription for the 1989 volume, at a cost of £17.50. The aims of the new quarterly journal are, to quote from the prospectus: ". . . . to publish short papers and popular articles of high quality and wide interest on insect natural history, behaviour, ecology, physiology, genetics and taxonomy (mainly Palaearctic). . . ."

Concluding with some comments on this journal, we would remind readers that the quality of the *Record* is determined by both the number of subscribers and the quality of the contributions. As with all publications, new subscribers are our life-blood. If readers find the contents of the *Record* interesting why not recommend a subscription to a friend, colleague, museum or library? (If not, why not tell the Editor?)

We welcome notes, observations and papers on all aspects of entomology, but particularly those covering British and European Lepidoptera or Coleoptera. We will be publishing detailed notes for contributors in due course, but in the meantime contributors using word

processors can help by following a few simple rules: DO use double spacing, "house style" and send us two copies of your text, DON'T use block capitals, underlining (except for scientific names), italic or condensed typefaces.

PECHIPOGO STRIGILATA L. (LEP.: NOCTUIDAE), THE NOT-SO-COMMON FAN-FOOT — Mr Elliott (*Ent. Rec.* **95**: 238-241) drew attention to the fact that the so-called common fan-foot, *Pechipogo strigilata* L., can no longer be regarded as a common moth, and commented specifically on a lack of recent records from Wiltshire where de Worms (1962, *The macrolepidoptera of Wiltshire*) had described it as "fairly common". Skinner (1984, *Moths of the British Isles*) states that in recent years the species has rarely been seen outside north Hampshire, east Sussex and south-east Kent. In view of these observations, the following recent records may be of interest.

In June 1983 I captured several specimens of *P. strigilata* in light traps in Bentley Wood, south Wiltshire. The specimens were confirmed by the late Roy Pitman. Subsequently I encountered the species in Bernwood Forest on the Oxfordshire/Buckinghamshire border. I worked the Forest for three years from 1984 to 1986 and the species turned up each year. I exhibited a specimen from the Bernwood collection at the annual exhibition of the British Entomological and Natural History Society in October 1986. Small unplanted areas consisting of native trees and shrubs survive amongst the conifer plantations in the Oakley Wood (Bucks) and Waterperry Wood (Oxon) parts of the Forest. The common fan-foot was strongly associated with these unplanted areas and within them it was a regular visitor both to Heath and Robinson light traps. The moth was never numerous; the most I had in one night was nine in a Robinson trap operated on 23 June 1985 amongst oak, birch and aspen trees with a hazel understorey. On the same night only one specimen came to a similar trap placed in an adjacent ride. A similar pattern was obtained in 1984 with Heath traps when no individuals were ever taken in the ride but three separate individuals were taken at a Heath trap placed amongst the trees (on 6, 13 and 20 June). The same was true in Waterperry Wood when rides and woodland blocks were trapped simultaneously. This observation is reminiscent of Elliot and Skinner's experiences with the closely related *Herminia tarsicrinalis* (*Ent. Rec.* **96**: 144-146) in which they described how the moth was captured most successfully by placing light traps within thickets.

Recently, I returned to Wiltshire and in Langley Wood, on 8.vi.1987, with David Sheppard, disturbed a fresh male *strigilata* amongst tall alders surrounded by oak, deep within the wood.

P. WARING, Nature Conservancy Council, Northminster House, Peterborough PE1 1UA.

NOTE: This species is well established in the Wyre Forest, Worcs, Shropshire. B.S.

MESAPAMEA SECALELLA REMM — A JUNIOR SYNONYM OF *MESAPAMEA DIDYMA* ESPER (LEP.: NOCTUIDAE)

By B. J. LEMPKE*

Abstract

In this paper, the names of the common rustic moth (*Mesapamea secalis* L.) and the lesser rustic (*Mesapamea secalella* Remm) are discussed. Evidence is presented that the common rustic is indeed *Mesapamea secalis* L., but that the lesser rustic, *Mesapamea secalella* Remm is a junior synonym of *Mesapamea didyma* Esper. The lectotype of *Noctua didyma* Esper, 1788, and the neotype of *Phalaena secalis* Linnaeus, 1758 are designated.

The common rustic moth

During the 19th Century the common rustic moth was known as *Hadena (Apamea) didyma* Esper. Aurivillius (1891), in his work on the northern European Macrolepidoptera referred to this species as *Hadena secalis* (L.) Bjerk. This name, with the two authors, was repeated in Staudinger and Rebel's important catalogue of Palaearctic Lepidoptera, issued in 1901, and thus *secalis* L. became the accepted name for the common rustic.

In 1983 Robinson and Schmidt Nielsen published an extensive paper reviewing the microlepidoptera described by Linnaeus and Clerck. One of these species was *Phalaena (Pyralis) secalis* Linnaeus, 1767. In the author's collection, kept by the Linnean Society of London, a pyralid was found with a label in Linnaeus' handwriting, reading "*secales*" (sic). This specimen was designated as the lectotype of *Ph. (P.) secalis*.

Thus doubt was cast on the true name of the common rustic moth. Kaaber & Skule (1985), in the Danish check-list, remarked "our well-known *Mesapamea* is therefore currently unnamed", and the 1987 Swedish catalogue expressed doubts by recording the species as ?*secalis*. This pessimism is, however, unjustified and the name *Phalaena (Noctua) secalis* Linnaeus, 1758, is perfectly valid as a little detective work will show.

Swedish rye-fields in the 17th and 18th centuries were affected by a condition known as "hvitax" (white ears), in which the tops of the ears died and turned white. This condition was originally ascribed to abiotic causes such as cold or wet, but in 1748 Rolander found that a lepidopteron larva was responsible. He succeeded in breeding the moth and in 1752 published an extensive article in which he described how the larva entered the stalk, eventually causing the death of the ear. He described the larva, pupa and moth, summarising the latter as follows: "PHALAENA seticornis, spirilinguis, fasciculata; alis depressis fuscis,

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striatis; A Latino inscriptis''. (The A is the reniform stigma with its dark centre cf. Dahlbohm, 1837.) In 1758 Linnaeus described *Phalaena (Noctua) secalis,* mentioned Rolander's article, used with minor changes his Latin description of the moth and summarised Rolander's description of the biology. Thus there is no doubt that *Phalaena (Noctua) secalis* is the insect that caused ''white ear''.

Linnaeus had never seen the species himself, and his doubt about the identity was such that he omitted it from the *Fauna Svecica*! Later, he obtained a pyralid new to him and, supposing that this was the wrong-doer, described it in 1767 as *Phalaena (Pyralis) secalis* with practically the same description as in 1758. Small wonder that nobody could recognise such a pyralid!

Returning to the Swedish literature, Bjerkander (1778) published new data on the relationship of white ear and larval damage. However, neither in the title nor the contents is a scientific name mentioned, so why Aurivillius (or Staudinger and Rebel who copied him) should consider Bjerkander the real author of the name *secalis* is a puzzle.

In 1837, Dahlbohm's book on economically important Scandinavian insects was published, and this provided the solution to the identity of the''white ear moth''. One of the two coloured plates in this work figures the moth and its larva. Schöyen (1879) discussing the identity of *Pyralis secalis* L. concluded that Dahlbohm's figure clearly represented *Hadena didyma* Esper. This conclusion was correct, the moth being the species we now know as *Mesapamea secalis* (Linnaeus). *Phalaena (Noctua) secalis* Linnaeus, 1758 and *Phalaena (Pyralis) secalis* Linnaeus, 1767 are two different species. The second name, as a junior homonym, is of course invalid. Morover, it is also a junior synonym of *Phalaena (Pyralis) frumentalis* Linnaeus, described by him in 1761! (Robinson and Nielsen.)

In order to fix the identity of *Phalaena (Noctua) secalis* Linnaeus, 1758, it is necessary to designate a neotype, especially as Rezbanyai (1985) has described a third European species, *Mesapamea remmi,* from the *secalis* complex. These three species can only be separated with certainty by examination of the genitalia. Dr B. Gustafsson (Naturhistoriska Riksmuseet, Stockholm) kindly sent me five Swedish specimens from which I selected the one that most resembles Rolander's description and Dahlbohm's figure. The label reads: ''Ol(and) Räpplinge ♀; Emilsro; 31.7.1986; B. Gustafsson''. Both the neotype and its genitalia are figured (Figures 1 and 3). The specimen belongs to Tutt's *reticulata* group: rather pale brownish grey forewings, with distinct transverse lines and a yellow reniform stigma, ''probably the commonest form in Britain'' says Tutt (1891). Heinicke (1960) also discussed the species at great length, but this work is of limited use as it preceded both the splitting of the European *secalis* group and the difficulties caused by Linnaeus' two *secalis* species.

Figure 1. *Mesapamea secalis* L. Genitalia of neotype. Slide no. 238. R.deVos, Coll. Naturhistoriska Riksmuseet, Stockholm.

The lesser rustic

The discovery of the generally smaller *Mesapamea secalella* by Remm (1983) is now well known. This species occurs throughout most of Europe, and may be locally as common as the true *secalis*. In the 18th and 19th centuries several *secalis* forms were described as good species, simply because transitional forms were missing from the small collections from which they were described.

The first author to figure and name *secalis* forms as good species was E. J. C. Esper. In 1788, plate 126 of Vol. 4 of his great work on the European Lepidoptera was issued. The noctuid depicted in fig. 7 was

named by him *Noctua didyma*. According to Horn (1926) part of Esper's collection was transferred from the museum in Erlangen (Esper's home, about 20 km NNW from Nürnberg, Bavaria) to the zoological museum in München. At my request, Dr W. Dierl, keeper of Lepidoptera, looked for *secalis* specimens in the Esper collection, and found two. When he visited Amsterdam in 1986 for the Third European Congress of Entomology, he brought the two specimens, together with genitalia slides he had already prepared. The specimens are a male and a female. The female, still in excellent condition, is the specimen illustrated in fig. 7, in 1788. The genitalia show it to be a true *secalis*. The male, which is a little worn, is an undoubted *secalella*! For Esper, both specimens belonged to the same species. He wrote (p.378, 1796) that *Noctua didyma* varies considerably in colour and markings, but is especially characterised by the black line above the inner margin of the forewings.

I am therefore entitled to designate this male as the lectotype of *Noctua didyma* Esper, 1788. In this way we are sure that no older species name for the moth exists. The name *secalella* Remm, 1983 thus becomes a junior synonym. Both of Esper's specimens are figured (figs. 4 and 5) but for convenience only the aedeagus of the lectotype (fig. 2), which is sufficient to confirm its identity.

Figure 2. *Noctua didyma* Esp. Aedeagus of lectotype (enlarged). Slide no. 2646. W.Dierl, Zoologische Staatssammlung, München.

We owe it to the careful way in which Esper preserved his specimens that so many still exist. Each one was kept in a small, glass-topped cardboard box, where they have remained undisturbed all these years. For interest, the female *Noctua didyma* is shown in Esper's original box (fig. 6).

Figure 3. *Mesapamea secalis* L. Female, neotype. ×1½. Coll. Naturhistoriska Riksmuseet, Stockholm.

Figure 4. *Noctua didyma* Esp. Male, lectotype. Esper collection no. 1026. x1½. Zoologische Staatssammlung, München.

Figure 5. *Noctua didyma* Esp. Female. Esper collection no. 1027. x 1½. Zoologische Staatssammlung, München.

Figure 6. *Noctua didyma* Esp. Esper's female in its original box. Natural Size.

Acknowledgements

I should like to thank Dr W. Dierl for the loan of two specimens from the Esper collection and their genitalia slides; Dr B. Gustafsson for photocopies of old Swedish literature and the loan of *M. secalis* specimens; Mr J. Huisenga for taking the photos; Drs R. de Vos for checking of the Swedish specimens and Prof. Dr C. Wilkinson for correcting the English text.

References

Aurivillius, C. (1888-1892). *Nordens Fjärilar, handbok i Sveriges, Norges, Denmarks och Finlands Macrolepidoptera.* Aktiebolaget, Hiertas Bokförlag, Stockholm (p.143, 1891).

Bjerkander,C. (1778). Om Hvitax-Masken. *K.svenska VetensAkad. Handl.* **39:** 289-293.

Dahlbohm,G. (1837). *Kort underrättelse om skandinaviska Insekters allmännare skada och nytta i hushallingen.* Fr.Berlings Forlag, Lund.

Esper, E.J.C. (1786-1805). *Die Schmetterlinge in Abbildungen nach der Natur mit Beschreibungenen,* **4.** *Die Eulenphalenen.* Wolfgang Walthers, Erlangen.

Gustafsson, B. (ed.) (1987). *Catalogus Lepidopterorum Suecica.* Entomologiska Foreningen, Naturhistoriska Riksmuseet, Stockholm.

Heinicke, W. (1960). Revison der Gattung Apamea Ochs, 1816 (Lep.:Noctuidae) 2. Teil II Die Formen von *Mesapamea secalis* L. *D.ent.Z.* N.F. **7**:166-176.

Horn, W. (1926). Uber den Verbleib der entomologischen Sammlungen der Welt. *Suppl ta.ent.* **12**:1-120.

Kaaber, S. & Skule, B. (1985). Noctuidae. In Katalog over de danske Sommerfugle: 103-114. *Ent.Meddr.* **52** (2-3): 1-163.

Linnaeus, C. (1758). *Systema Naturae.* ed. 10. Laurentius Sylvius, Stockholm.

— (1761). *Fauna Svecica,* editio altera. Laurentius Sylvius, Stockholm.

— (1767). *Systema Naturae.* ed. 12. Laurentius Sylvius, Stockholm.

Remm, H. (1983). New species of Noctuidae (Lepidoptera) from the USSR. *Ent.Obazr.* **62**: 591-600.

Rezbanyai-Reser, L. (1985). Mesapamea-Studien II. *Mesapamea remmi* sp.n. aus der Schweitz, sowie Beiträge zur Kenntis der westpalaearktischen Arten der Gattung *Mesapamea* Heinicke 1959. (Lep.: Noctuidae). *Ent.Ber.Luzern.* **14**: 127-148.

Robinson, G.S. & Nielsen, E.S. (1983). The microlepidoptera described by Linnaeus and Clerck. *Syst.Ent.* **8**: 191-242.

Rolander, D. (1752). Hvit-ax-Masken. *K.svenska VetensAkad.Handl.* **13**: 62-66.

Schoyen, M.W. (1879). Pyralis secalis L. *Stettin. ent.Ztg.* **40**: 389-396.

Staudinger, O. & Rebel, H. (1901). *Catalog der Lepidopteren des palaearktischen Faunengebietes.* R. Friedländer, Berlin.

Tutt, J.W. (1891). *The British noctuae and their varieties.* **1.** Warne, London.

A NOTE ON TINAGMA BALTEOLELLA F.v.R. (LEP.: DOUGLASIIDAE) — In the autumn of 1987 I collected a number of dead stems of viper's bugloss (*Echium vulgare*) from the shingles at Dungeness, Kent, in order to breed and photograph the common, stem-feeding species *Tinagma ocnerostomella* Staint.

The stems were hung outside, exposed to the elements, all winter and brought inside late April 1988. On 9th May the first of a considerable number of *T. balteolella* emerged. This species was first added to the British list in 1976 (Agassiz, *Ent. Gaz.* **26**: 291-293) and, as far as I am aware, has only been noted from the coastal sand-dunes of east Kent, from where it was first recorded. Dungeness is geographically reasonably close to the original locality, but ecologically very different.

Perhaps it is worth looking further afield for this easily overlooked species? PAUL SOKOLOFF, 4 Steep Close, Orpington, Kent.

CRAMBINAE (LEPIDOPTERA: PYRALIDAE) IN GREECE WITH NEW RECORDS

By DAVID E. GASKIN*

Introduction

Despite their potential importance as pests of forage and other graminaceous crops, the Crambinae of Europe remained a relatively neglected group until the extensive studies undertaken by S. Bleszynski between 1955 and his unfortunate death in an accident in 1969. The crambine fauna of Greece is probably one of the least studied.

Unfortunately, in his major revision of the Crambinae of the Palaearctic in 1965, Bleszynski summarized distributions, referring to many species as being known from "Balkanhalbinsel" or "Balkanlander". Most of his source material was from relatively few collections; taken or examined by Staudinger (1871), Rebel (1916, 1918, 1933, 1934, 1936, 1939), Rebel and Zerny (1931), Schawerda (1937), Osthelder (1941, 1951), Drenowski (1930), Thurner (1940), Touleschkov (1951) and Amsel (1939, 1958). Closer examination of Bleszynski's major sources of information frequently reveals that the two regional conglomerate terms given above in fact refer to material collected in Albania, Bulgarian Thrace and Bulgarian and Yugoslavian Macedonia. It is a matter of some difficulty therefore, to produce a coherent picture of the crambine fauna of present-day Greece. Further problems with using the source literature are caused by a number of misidentifications, and the use of names which have since been synonymised. It was advisable therefore, to be wary of identifications in the articles listed above unless the material in question could be re-examined or had been dealt with by Bleszynski in the course of his studies in the 1950s and 1960s.

In order to provide an overview of the crambine fauna of Greece, which proves to be unexpectedly rich in terms of number of species despite the barren nature of much of the terrain, the author has segregated those species confirmed as occurring in the peninsula and the islands of the Adriatic, Aegean and Mediterranean, including Crete. To these are added records obtained during recent collecting expeditions in the three years 1983-85, during which I took two species of the genus *Agriphila* and one of *Ancylolomia* not previously reported from Greece, and records given by Bleszynski (1969), Ganev and Hacker (1985). Information on the crambine fauna of adjacent countries, including Cyprus, is included where comparison is appropriate. Further records by Ganev (1982, 1983, 1985 and 1987) are discussed at the end of this paper.

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New records for Greece

1. *Agriphila cyrenaicella* (Ragonot): 7 males, Kardamyla, Chios, 22-24.ix.85.
Note: A possible record from Kos was given by Turati and Fiori (1930); "*Crambus cyrenaicellus* Rag. o specie affine? L'esemplare di Coo del'ottobre 1929 non è abbastanza in buone condizioni per poter essere fissato con sicurezza." Bleszynski (1957, 1965) did not mention this specimen, but since he cites papers by Turati extensively it may be concluded that either the specimen is lost or was not of this species, and less likely that Bleszenski overlooked the record. Previously the nearest confirmed records to Greece were from Sicily and Syria (Bleszynski 1965).
2. *Agriphila dalmatinella* (Hampson): 2 males, Kardamyla, Chios, 22-24.ix.85.
Taken in daytime with the previous species in short withered grasses and ericaceous scrub at about 200 m elevation. Bleszynski (1965) confirmed this species for Dalmatia and Herzegovina (Yugoslavia). Thurner (1940), found it in the SW of Kosovo province of that country in mid-September.
3. *Ancylolomia pectinatella* (Zeller): 6 males, Kardamyla, Chios, 17-22.ix.85, in short grasses (*Phleum* sp.). Previously recorded from Limassol, Cyprus, in October by Rebel (1939, 1940), and Jugoslavia (Bleszynski 1965).

Summary of previously verified records and new data 1983-85.

DIPTYCHOPHORINI

4. Glaucocharis euchromiella (Ragonot): "Crete" (Bleszynski 1965); the specimen in BMNH examined by Gaskin is from Vrissos. This species was first described from Crete as *Pareromene rebeli* (Osthelder 1940). The range includes Syria, Armenia (USSR) and Iran (Bleszenski 1965; material in BMNH re-examined by the author).
5. *Euchromius rayatellus* (Amsel): 6, Platamon, Katerini, 9-14.v.68, U. Roesler, at light (Bleszynski 1969); 1 female, 16 km SW of Komotini, 5.viii.84 (Ganev and Hacker, 1985). Also known from Italy. Widespread from Turkey to Syria and Jordan (Bleszynski 1965).
6. *E. bellus* (Hübn.): "Greece" (Staudinger, 1871; Bleszynski 1965); 2 males, 16 km SW of Komotini, 5.viii.85 (Ganev and Hacker, 1985); 13 males, 6 females, Lassi, Kefalonia, 1-14.v.83, at light and 1 male, Kardamyla, Chios, 17.ix.85, at light (author's data). Staudinger's specimens were from Corfu. Thurner (1940) took it at localities in Bulgaria in July; it is widespread in most other countries of central Europe and the Mediterranean belt.

7. *E. ocellus* (Haw.): Rodos (Rebel 1918), "Greece" and Crete (Staudinger 1871; Bleszynski 1965); 1 male, 1 female, Platamon, Katerini, 9-14.v.68, U. Roesler, at light (Bleszynski 1969); 5 males, 3 females, Lassi, Kefalonia, 1-14.v.83, at light (author); 2 males, 3 females, Planos, Zakynthos, 7.vi.84, at light (author); 2 males, Marmaron, Chios, 23-25.vi.85, at light (author). Rebel (1939) recorded this species from several localities in Cyprus, Larnaka in March, and Limassol and Platres in August-September.
8. *E. superbellus* (Zell.): Rebel (1933-34) recorded a specimen in June, from Vathi, on the island of Samos.

   Bleszynski (1965) did not verify this report. Ganev (1987) reported 1 female from Rhodopi, Fanari and 1 female from Rhodes, Eleoussa, in 1985 and 1982 respectively; Hayward (1938) and Amsel (1958) confirmed its presence in Cyprus (as *Ommatopteryx cypriusella*), and in Bulgaria (Amsel 1939).
9. *Pseudoeuchromius latus* (Staud.): Described as new from Karpenision by Staudinger (1871; Bleszynski 1965); this interesting species has yet to be recorded elsewhere.

CRAMBINI

10. *Crambus nemorellus* (Hubn.): "Greece" (Bleszynski 1965). I have no further information on this record.
11. *C. pratellus* (Linn.): Bleszynski (1965) believed that this species occurred in Greece, but could not confirm it. Rebel (1918) and Rebel and Zerny (1934) recorded it in central Albania (as *Crambus dumetellus* Hübn.) in June, Amsel (1939) in Bulgarian Macedonia in late May, and Daniel et al. (1951) in Yugoslavian Macedonia in June.
12. *Angustalius malacellus* (Dup.): Noted in Attica by Staudinger (1871; Bleszynski 1965). Also recorded from Limassol, Cyprus in August-September by Rebel (1939).
13. *Agriphila tristella* (D. & Schiff.): "Greece" (Staudinger 1871; Bleszynski 1965); also recorded from Albania in August-September by Rebel and Zerny (1934) in Yugoslavian Macedonia by Thurner (1940).
14. *A. latistria* (Haw.): "Greece", and Crete (Bleszynski 1965).
15. *A. brionella* (Zerny): Some material from Crete may be referable to this species (Bleszynski 1965). It has yet to be confirmed from the mainland, although Bleszynski (1965) verified other Balkan records; from Albania in August-September (Rebel 1918), and Croatia (Rebel and Zerny 1934), also Yugoslavian and Bulgarian Macedonia in August-September (Thurner 1940).
16. *A. tolli* (Blesz.): So far taken from Crete (Bleszynski 1965) and Evro, Kivisos, 22-3.viii.85 (Ganev 1987); also known from Italy

(author's record), Austria, Romania, Hungary and Dubrovnik on the Dalmatian coast.

17. *A. reisseri* (Blesz.): Described as new, from Crete (Bleszynski 1965).
18. *A. inquinatella* (D. & Schiff.): Not specifically reported from Greece by Bleszynski (1965), who did not confirm the record from Corfu given by Staudinger (1871), but taken by the author as follows; 11 males, Mt. Falakro, Macedonia, 20.ix.1985, in long rough grasses at 2,200 ft. Previously Thurner (1940) had taken it in Bulgarian and Yugoslavian Macedonia in July, Rebel and Zerny (1934) in Albania in August-September. Rebel (1939) gave records from Limassol, Cyprus, for July and September.
19. *A. selasella* (Hübn.): 1 male, Florini, 1,000 m, 30 km SW of Florina, 8.viii.85 (Ganev, 1987).
20. *A. paleatella* (Zell.): Kimassos, Peloponnesos, 27.viii.1983 (Ganev, 1985). This record is included in the main list, but the author gave no illustration or genitalia figure. There are several closely related species.
21. *Chrysocrambus linetellus* (Fabr.): 21 males, Kardamyla, Chios, 28.v.1984, in new growth of tall grasses (?*Apera* sp.) on arable terraces. This species was recorded from Greece first by Staudinger (1871) on Parnassos, then by Rebel (1936) at Embona, Rodos, and by Rebel (1939) in three localities in Crete, Kalithes (May), Neapolis (May) and Tilisso (May and June) and by Bretherton (1969) on the plateau above Anogia, Mt. Ida. In the earlier literature this species is to be found under the name *Crambus cassentiniellus* Zeller (*cassentiellus* sic in Bretherton). Roesler captured specimens on the mainland of Greece at Platamon, Katerini (3 males, 9-14.vi.1968) and at Gorgopotamos, 15 km S. of Albania (10 males 28-29.v.1968) (Bleszynski 1969). Under the old name, the species has also been recorded in Albania in May and June (Rebel 1918) and the Kosovo province of southern Yugoslavia in June (Daniel et al. 1951), and in Bulgarian Macedonia by Thurner (1940) in the same month.
22. *C. craterellus* (Scop.): 1 male, Falakron, 5 km SW of Volos, 17.vii.84 (Ganev and Hacker, 1987). This species is widespread in the Palaearctic.
23. *Pediasia contaminella* (Hubn.): Recorded from "Greece" by Staudinger (1871), and taken at Platamon, Katerini by U. Roesler during 9-14.vi.1968 (Bleszynski 1969). It has also been taken in Albania in June and September (Rebel 1918; Rebel and Zerny 1934), and recorded from Montenegro by Rebel (1913) and Drenowski (1930). Daniel et al. (1951) and Thurner (1940) also gave several records for Macedonia (Yugoslavia and Bulgaria).

24. *P. jucundella* (Herr.-Schf.): "Greece" (Bleszynski 1965). He made an uncited reference to a literature source, but so far I have not been able to trace this.
25. *P. fascelinella* (Hübn.): "Greece" (Bleszynski 1965), based on the specimens from Sarepta, identified by Staudinger (1871).
26. *P. luteela* (D. & Schiff.) 3 males, Falakron, 5 km SW of Volos, 17.vii.84 (Ganov and Hacker, 1987); this species is widespread in Europe and western Asia.
27. *Catoptria acutangulella* (Herr.-Schf.): Recorded from the Olimbos Massif in eastern mainland of Greece by Touleschkov (1951), but while Bleszynski (1965) cited this article, he did not confirm the record. It is not clear if Ganev (1982) referred only some, or all of Touleschkov's material to *C. olympica* Ganev. The species, however, is widely distributed in adjacent regions; Albania in July-August (Rebel and Zerny 1934). Yugoslavian Macedonia (Thurner 1940; Daniel et al. 1951) and Montenegro (Rebel and Zerny 1934).
28. *C. mytilella* (Hübn.): "Greece" (Bleszynski 1965). Also recorded from Albania, and Yugoslavian Macedonia by the authors given in the previous section.
29. *C. olympica* Ganev: 53, Olimbos-Kataphygion, 1,750-2,100 m, 1937 & 1962 (Ganev, 1982).
30. *C. dimorphella* (Staud.): Recorded from Crete and Cyprus (Bleszynski 1965).
31. *C. falsella* (D. and Schiff.): Recorded from the Olimbos Massif in July by Touleschkov (1951), confirmed by Bleszynski (1965). It flies in July in Yugoslavian Macedonia (Drenowski 1930; Thurner 1940) and was also recorded in Albania by Rebel and Zerny (1934).
32. *C. pinella* (Linn.): "Greece" (Bleszynski 1965), no locality given, but the "*pinetellus* (sic) (L.)" of Staudinger (1871) from Parnassos in July is probably the source specimen. Recorded from Yugoslavian Macedonia by Drenowski (1930), Rebel and Zerny (1934) and Thurner (1940).
33. *C. gozmanyi* Blesz.: 4 males, 4 females, Falakron, 6 km SW of Volas, 16.vii.84 (Ganev and Hacker, 1987). Previously recorded from Rumania and Bulgaria (Bleszynski, 1965).
34. *Metacrambus caractellus* (Zell.): "Greece" (Bleszynski 1965), without locality; 3 males, 1 female, Rodos, Eleoussa, August 1982 (Ganev 1987). Recorded also from Albania by Rebel and Zerny (1934), and from Platres and Limassol in Cyprus during August by Hayward (1938) and Rebel (1940).
35. *Xanthocrambus saxonellus* (Zinck.): First noted for Greece on Parnassos by Staudinger (1871), and later from Karpenisi in June and July by Amsel (1939); Also recorded from Albania (in July), Bulgarian Macedonia by Amsel (1939), and Yugoslavian Macedonia by Thurner (1940).

36. *Mesocrambus candiellus* (Herr.-Schf.): Athens, Greece (Bleszynski 1957); 2 males, 1 female, 35 km N of Alexandroupolis, 20-21.viii.85 (Ganev, 1987). Canea, Crete by Rebel (1916), Osthelder (1941) and Bleszynski (1965).
37. *Platytes cerusella* (D. & Schiff.): On Parnassos by Staudinger (1871), Bleszynski (1965); 1 male, Falakron, 1700 m, 6 km SE of Volos, 16.vii.84 (Ganev and Hacker, 1985); also from Yugoslavian Macedonia (Thurner 1940) in July, Albania (May), and Bulgarian Macedonia (Rebel and Zerny 1934).

CHILONINI

38. *Chilo luteelus* (Motsch.): 2 males, 16 km SW Komotini, 5.viii.84 (Ganev and Hacker 1987). A common species throughout the Palaearctic (Bleszynski 1965).

CALAMOTROPHINI

39. *Calamotropha hierichuntica* (Zell.): 1 male, 35 km N of Alexandroupolis, 20-21.viii.85 (Ganev 1987).

ANCYLOLOMINI

40. *Ancylolomia palpella* (D. & Schiff.): 1 male, lower slopes of Mt. Falakron, Macedonia, 900 m, 29.ix.1985, swept from short pasture grass (author's record). Bleszynski (1965) did not record this species from Greece, but during the literature research the author found an unconfirmed report by Graves (1926) for Armutei, Kilkis near Thessaloniki. It is known from Albania (Rebel and Zerny 1934), Bulgarian and Yugoslavian Macedonia (Rebel and Zerny 1934; Thurner 1940).
41. *A. tentaculella* (Hübn.): 5 males, Kardamyla, Chios, 20-22.ix.1985, in low scrubby heath with short dry grasses (author's record). First recorded from Attica by Staudinger (1871), confirmed by Bleszynski (1965). Also recorded from 19 km SE of Florina (Rebel and Zerny 1934). The species has also been taken in southern Yugoslavia (Daniel et al. 1951), Albania (Rebel and Zerny 1934) and Limassol, Cyprus (Rebel 1939).
42. *A. disparella* (Hübn). "Greece" (Staudinger 1871), under the old name of *A. contritella* (Zell.); Kimissos, Peloponnesoss, 27.viii.83 (as "first record for Greece") (Ganev, 1985); Also taken in Limassol, Cyprus by Rebel (1939), otherwise distributed around the western margin of the Mediterranean from Spain and Morocco to Sicily, and north to Hungary (Bleszynski 1965).

Discussion

It is unlikely that the list assembled in this paper fully represents the crambine fauna of Greece; so many other species have been taken in adjacent areas of Albania, Yugoslavia and Bulgaria in the past that they are almost certain to occur in Greece as well. The necessary extensive collecting effort has never been mounted.

Nevertheless, as those who have collected Lepidoptera in that country can attest, Crambinae are not nearly as common, as a proportion of the moths taken by day or at light, as one is accustomed to expect in central or northern Europe. The overlap between temperate and Mediter ranean zones lies relatively far north in Greece and this is paralleled in the crambine fauna. The ''European'' species such as *A. inquinatella* are more typically found in cultivated grasslands of the northeastern plains, and the northern border ranges. The thorny scrub lands which characterize much of the central and southern parts of Greece support essentially Mediterranean semi-arid zone genera such as *Ancylolomia* and *Euchromius.* In these regions and in equivalent parts of Turkey, except in the high mountains, I have observed a tendency for Crambinae to emerge in two waves, first in May, as soon as the temperatures are warm enough for activity, taking advantage of grasses still left fresh from spring rains. There is then a second emergence of adults in the autumn, so that eggs can be laid on the new growth of grasses coincident with the September-October rains.This pattern is in sharp contrast to the July-September peak of adult emergence so typical of northern and central Europe, and also of the northern mountain ranges of Greece.

In addition to the records summarized in this paper, Ganev (1982, 1983, 1985, 1987) has described a number of new taxa from material collected in Greece. After studying these diagnoses, I have considerable reservations about the validity of their status, for the reasons outlined below.

Calamotropha hackeri Ganev, 1985: Differs from *C. hierchuntica* Zell. in the shading of the forewings, which could be the result merely of selection to a local habitat, and in the dimensions of the eighth tergite and the corpus bursae and ductus bursae of the female genitalia. The apparent shape of the tergite can vary with the degree of individual sclerotization, the corpus bursae in many groups of Lepidoptera is notoriously variable, and in fact the ductus and corpus bursae can be drastically different in shape depending on whether the female is virgin or has been fertilized. I am not convinced that the unique holotype is other than a variety of the Zeller species.

Catoptria olympica Ganev 1982 (1983): Once again, the forewing colour could simply be an adaptation of a local population to a particular habitat. The material described is very similar to *C. luctiferella* H.-S.; this species being notoriously variable in habitus (see Bleszynski, 1965, plate 15, Figs. 180, 180a, for example). I can see no

significant differences in the female genitalia of the two species, based on Ganev's drawing, while in the male there is some minor difference in the basal costal and saccular sclerotization of the valva, both regions subject to considerable variation in many species of Palaearctic Crambini.

Catoptria fibigeri Ganev 1987: The female genitalia as figured appear to be well within the range of variation encountered in *C. acutangulella* (H.S.) The single male from Ionnina is identical in general form to the male of that species also, except in the basal costal/ saccular sclerotization of the valva. Given the variability of that zone in *acutangulella* across its range, it seems most unwise to describe a new species largely on the basis of a variation in costal zone sclerotization which may prove to be only individual in nature.

While they were not originally described from Greece, I have similar reservations about the description of new subspecies in *Catoptria biformella* Rbl., and *C. gozmanyi* Blesz. without a thorough investigation of variation across the range of each species. Ganev (1982 [1983]) also described a new species in the genus *Pediasia* from Bulgaria, *P. kasyi*. After looking at his drawings, I conclude it would fit quite readily within the expected range of individual variation for *P. radicivitta* (Fil.) or perhaps *P. walkeri* Blesz., both of which may in fact be local clinal variants of the same trans-Palaearctic species in any case.

Despite the work of Bleszynski (1965), all the genera of Palaearctic merit thorough revision, preferably after much more collecting effort in eastern Europe and west and central Asia. While there may in fact be merit in some of the new taxa recently published, it is unwise to add any new names to the literature without first comparing the material with the considerable holdings in the major museums of Europe to get a good idea of the types of variation encountered throughout the known range of each species, and the grounds on which a subspecies might be proposed and its distinction defended.

References

Amsel, H.G. von. 1939. Beitrage zur Kleinschmetterlings,-Fauna der Balkanländer und Kleinasiens. *D. Ent. Z.* **52**: 152-159.

Amsel, H.G. von. 1958. Cyprische Kleinschmetterlinge. *Z. Wiener Ent. Ges.* **43**: 51-75.

Bleszynski, S. 1957. Studies on the Crambidae (Lepidoptera). Part XIV. Revision of the European species of the generic group Crambus F. s.l. *Acta Zool. Cracov.* **1**: 161-622.

—, 1965. Microlepidoptera Palaearctica. Vol 1. Crambinae. (H.G. von Amsel, F. Gregor and H. Reisser, editors) 553 pp., 133 pl., in two parts, Verlag Georg Fromme & Co., Wien.

—, 1969. Crambidae aus der Türkei und aus Griechenland (Lep., Pyralidae) (Crambinae-Studien, Teil 46). *Ent. Z.* **79**: 25-27.

Bretherton, R.F. 1969. Notes on butterflies (Rhopalocera) in Crete in June, 1969. *Entomologist's Rec. J. var.* **81**: 296-301.

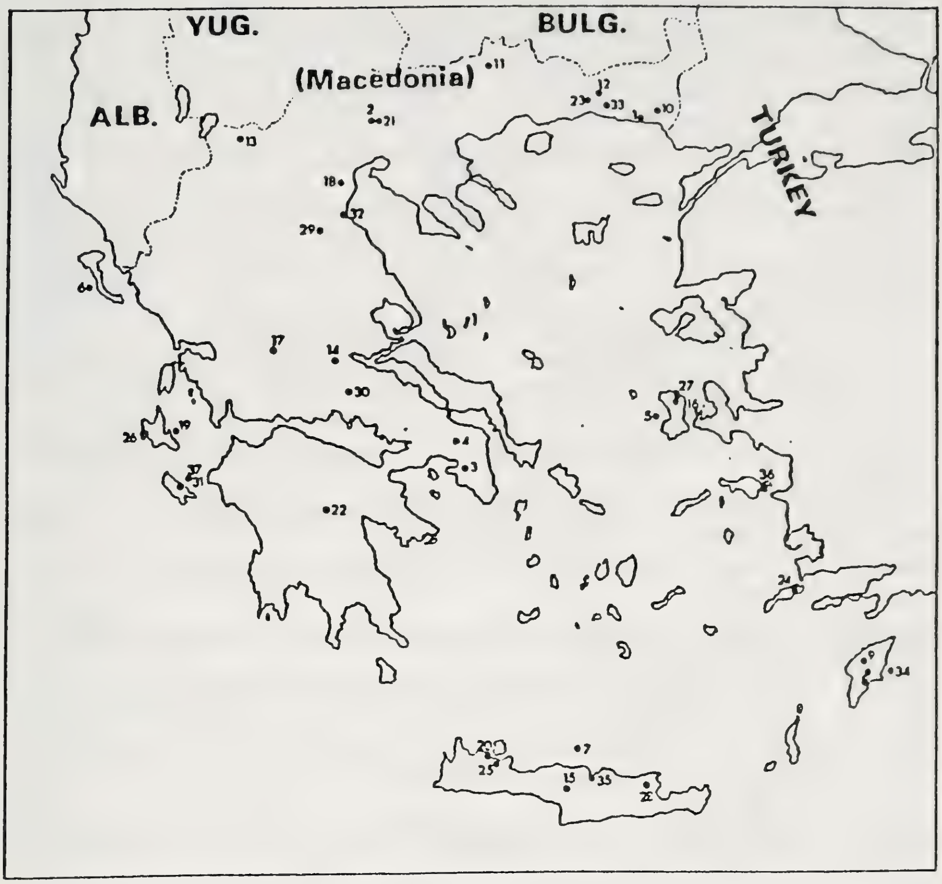

Fig. 1. ALB. — Albania; YUG. — Yugoslavia; BULG. — Bulgaria; Localities in text: 1. Alexandroupolis, 2. Armutei, 3. Athens, 4. Attica, 5. Chios, 6. Corfu, 7. Crete, 8. Eleoussa, 9. Embona, 10. Evro, 11. Falakron (Mt.), 12. Fanari, 13. Florina, 14. Gorgopotamos, 15. Idhi (Mt.) 16. Kardamyla, 17. Karpenision (Mt.), 18. Katerini, 19. Kefalonia, 20. Khania, 21. Kilkis, 22. Kimissos, 23. Komotini, 24. Kos, 25. Kalithes, 26. Lassi, 27. Marmaron, 28. Neopolis, 29. Olimbos, 30. Parnassos, 31. Planos, 32. Platamon, 33. Rodhopi, 34. Rodos, 35. Tilissos, 36. Vathi, 37. Zakynthos.

Daniel, V.F., W. Forster and L. Osthelder. 1951. Beiträge zur Lepidopterenfauna Mazedoniens. *Zool. Staats. München, Veroff.* (ser. 2) **15**: 1-78.

Drenowski, A.K. 1930. Beitrag zur Lepidopterenfauna S.W. Mazedoniens. *Spis. Blg. Akad. Nauk.*, **42**: 129-177.

Ganev, J. 1982(1983). Zur systematik der Crambinae (Lepidoptera) der Balkan-Halbinsel (I). *Zeitschr. Arb. Österr. Ent.* **34**: 123-125.

—, 1983. Zur Systematik der Crambinae der Balkan-Halbinsel-II (Lepidoptera). *Sonder. Nach. Bayerischen. Ent.* **32**: 23-27.

—, 1985. Zur Systematik der Crambinae der Balkan-Halbinsel-IV (Lepidoptera). *Sonder. Nach. Bayerischen. Ent.* **34**: 117-118.

Graves, P.P. 1926. Heterocera from Macedonia, Gallipoli and Central Greece. *Entomologist's Rec. J. Var.* **38**: 152-158. 165-170.

Haywood, K.J. 1938. Pyralidae and microlepidoptera collected in Cyprus during 1920 and 1921. *Entomologist's Rec. J. Var.* **50**: 6-7, 28-30; 80-82; 90.

Osthelder, L. 1941. Beitrag zur Kleinschmetterlingsfauna Kretas. *München Ent. Ges. Mitt.* **31**: 365-370.

Rebel, H. 1916a. Die Lepidopterenfauna Kretas. *Ann. Hofmus. Wien.* **30**: 66-172.

—, 1916b. Zur Lepidopterenfauna der Insel Rhodus. *Wiener Ent. Ver. Jahr.* **26**: 111-115.

—, 1918. Lepidopteren aus Mittelalbanien. *Zeitschr. Oesterrich. Ent. Ver.* **3**: 75-77; 85-88.

—, 1933. Griechische Lepidopteren II. *Z. Österr. Ent. Ver.* **18**: 91.

—, 1934. Griechische Lepidopteren III. *A. Österr. Ent. Ver.* **19**: 55-56; 63-66.

—, 1936. Zoologische Ergennisse einer Dodekanesreise von O. Wettstein 1935. *Akad. Wiss. Wien Math.-naturw. Kl., Sitzber. öst.* **145**: 19-33.

—, 1939. Zur Lepidopterenfauna Cyprens. *München Ent. Ges. Mitt.* **29**: 487-564.

—, and H. Zerny. 1934. Die Lepidopterenfauna Albaniens. *Dekschr. Ak. Wiss. Wien. Math.-naturw. Kl.,* **103**: 37-161.

Schawerda, K. 1937. Zwei neue Microheteroceren aus Mazedonien. *Z. öst. ent. Ver.* **18**: 55-56.

Staudinger, O. 1871. Beitrag zur Lepidopterenfauna Griechenlands. *Horae Soc. ent. ross.* (1870) **7**: 3-304.

Thurner, J. 1940. Die Schmetterlinge der Ochrid-Gegend in Mazedonien. *Mitt. naturw. Inst. Sofia* **14**: 9-35.

Touleschkov, K. 1951. Etudes faunistiques d'Olympe de la Gréce Insecta-Lepidoptera (in Bulgarian with long French summary). *Bull. Inst. zool. Acad. bulg. Sci.* **1**: 305-328.

Turati, E. and A. Fiori. 1930. Lepidotteri di Rodi. *Soc. Ent. Ital. Mem.* **9**: 196-214.

SITOTROGA CEREALELLA OL. (LEP.: GELECHIIDAE) IN WORCESTER — Mr Johnathan Cooter recorded this insect as a pest of "corn dollies" in the Hereford Museum in 1984. Subsequent to this, I was informed that a similar infestation had occurred in the Worcester Museum collection of locally made corn dollies. The insects proved to be *cerealella,* but it is not clear whether the wheat from whose seed-heads the moths emerged in 1987 was of local or imported origin. A.N.B. SIMPSON, The Sycamores, The Old Rectory, Leigh, Worcs.

CYDIA ILLUTANA H.-S. (LEP.: TORTRICIDAE) IN HAMPSHIRE — On June 10th 1975 I took a small tortricoid moth at m.v. light in my garden at Southsea. It was identified by me as *C. conicolana* Hey. and remained misidentified thus until I made a genitalia preparation a couple of years ago. I am indebted to E.C. Pelham-Clinton for identifying it as *C. illutana.*

I believe this is the earliest yet known example of this species in Britain. Dr J.R. LANGMAID, 1 Dorrita Close, Southsea, Hants PO4 0NY.

ESTABLISHMENT OF A POPULATION OF *DANAUS PLEXIPPUS* (LINNAEUS, 1758) (LEP.:DANAIDAE) IN SOUTHWEST EUROPE

By J. Martin & P. Gurrea*

Summary

The migratory behaviour of *D. plexippus* has allowed it to expand over a very wide area. Although specimens have been arriving in Europe continually, there is no firm evidence that populations have become established, probably due to the absence or scarcity of suitable larval foodplants. Over the last few years, and coinciding with an invasion of *D. chrysippus,* a colony of *D. plexippus* has become established in Europe for the first time.

The biology and distribution of this population has been studied. The distribution seems to be determined by the presence of *Asclepias curassavica.* This plant, which also originates from the American continent, is naturalised in some coastal zones of the southern Iberian Peninsula.

The biological cycle of *D. plexippus* in the Iberian Peninsula is similar to that of the southern zone of its original distribution area. This, and the possible evolution of the colony, is discussed.

Introduction

The winter migrations of populations of *Danaus plexippus* from North America is a biological phenomenon of great interest, in that it constitutes an extreme case within the insects, and as such it has been proposed for protection in the *IUCN Invertebrate Red Data Book* (Wells *et al,* 1983).

The migratory capacity has led to an expansion of this species from the Pacific coast of North America to Hawaii (1841-1852), New Zealand (1940), Australia (1870) and India (1901). From the Atlantic coast the expansion has been less spectacular, with populations established on the Islands of Madeira (1860), Azores (1864), and the Canaries (1887) (Leestmans, 1975).

Specimens have been noted in Europe on many occasions. In Great Britain these are summarised by Leestmans, 1975 and Bretherton and Chalmers-Hunt, 1982. Records from the Iberian Peninsula include Leestmans, 1975; Fernandez, 1982 and Eiroa and Novoa, 1983. The species does not appear to have become established, probably due to the scarcity of its larval foodplant. In recent years, colonies of *D. plexippus* have been found in the area surrounding Málaga, in Spain. (Arrebola, 1982b, 1983; Tapia, 1982, 1983a and b; Martin, 1983; Verdugo, 1984 and Machado, 1985.)

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This colonisation followed an invasion by *D. chrysippus* which became temporarily established on the south and east coasts of the Iberian Peninsula, from Cádiz to Tarragona. (Gonzalez 1980; Martinez, 1980; Torres, 1980, 1981; Arrebola, 1982 a and b, 1983; Tapia, 1982, 1983 a and b; Lencina, 1983; Monserat and Montes, 1983, Ochotorena, 1983; Hanus, 1984, Martinez del Pino and Moreno, 1984; Maso and Perez, 1984 and Verdugo, 1984). Although the majority of *chrysippus* colonies have died out, *plexippus* is still present in its original colonisation sites.

Regular visits to the colonisation sites have been made throughout the year since 1983. Over this time, many specimens have been collected, mainly as larvae. All stages have been reared at room temperature, in the laboratory, using *Asclepias curassavica* as the larval foodplant. Examples of reared material have been deposited in the Museo Nacional de Ciencias Naturales (Madrid) and the Universidad Autónoma of Madrid.

Larval host-plants and distribution of major foodplant.

In the study zone, eggs and larvae of *plexippus* have always been found on *Asclepias curassavica* L., although others have found larvae on *Gomphocarpus fruticosus* L. (Machado, 1985.)

A. curassavica is likewise a native of the American continent (Tuttin, 1972; Guinea and Ceballos, 1984), being found mainly in tropical areas. Together with other species of this genus, and other members of the Asclepidiacea it makes up the spectrum of host plants of *D. plexippus*. Other host plants have been listed, by Ackery and Vane-Wright, (1984).

This plant is now naturalised at many sites on the coastal zones of the southern Iberian Peninsula. Although the history of its introduction and spread is not known with any certainty it is a common cultivated plant, usually in greenhouses, over much of Europe. It was introduced into Great Britain in 1692. (Chittenden, 1977). In principle, its naturalisation should not be difficult, as the species produces abundant, wind-transported seeds. In practice, it has a requirement for adequate water, a warm climate and a frost-free environment. The genus *Asclepias* includes species which form vegetative clones, requiring a complex cross-pollination mechanism. In practise, pollination requires a medium to large insect in order to transfer the large "pollinarium" between vegetative clones (Kephart, 1983; Morse and Fritz, 1983 and Morse, 1983).

At the present time, *A. curassavica* is naturalised in three main areas of the Iberian Peninsula: extensively around the villages of Torrox, Frigiliana, Nerja and Maro; a small colony around Churriana and finally in the province of Cádiz, mainly in the "de la Miel" river area of Algeciras. These sites cover a considerable area, and at Torrox we have found plants from the coast to more than 10 km inland. All sites

maintain the optimum ecological conditions — plants occurring in marginal zones along the courses of rivers that flow all the year and along the edges of irrigation channels. These observations agree with the published data on *A. curassavica* (Tuttin *et al,* 1972; Guinea and Ceballos, 1974).

We have found *D. plexippus* larvae and adults at all the major sites except within the Province of Cádiz. (See also Arrebola, 1982b, 1983; Tapia, 1982, 1983 a and b, 1984; Verdugo, 1984; Machado, 1985). Adult butterflies have been seen visiting the flowers of *A. curassavica* and *Nerium oleander*, as well as drinking from puddles or dew-covered plants.

Climatology of the area, and biology of *D. plexippus*

The whole coastal zone of Cádiz and Málaga is characterised by a mild climate, absence of winter frosts, and low annual rainfall (Table 1 and Figure 1). The area of Nerja is noted for its production of "tropical" crops such as custard apple, avocados, sugar cane, etc. *A. curassavica* is in leaf throughout the year, flowering from February until November.

Under these conditions, *D. plexippus* breeds continuously and eggs, larvae, pupae and adults can be found in every month. The density of larvae can reach considerable proportions, and it is not unusual to find plants defoliated, especially towards the end of November, with larvae wandering over the ground in search of fresh food. During the "winter" months of December and January, there is a noticable abundance of eggs.

Perhaps the most interesting fact is that this population and those present on islands such as Madeira, Canary Islands and the Azores, behave like non-migratory races, when, in all probability, they arose from migratory stock (Ackery and Vane-Wright, 1984).

Origin of the population

In principle, the origin of this population can be considered as American, since substantial objections exist to the theory of Macronesic origin (ie from Madeira, the Canaries and the Azores) for those specimens arriving in Europe (Leestmanns, 1975).

The date of arrival was probably 1981, a year when there was a huge immigration into Europe — for Great Britain, the records were summarised by Bretherton and Chalmers-Hunt (1982), and for the Iberian Peninsula by Fernandez (1982) and Eiroa and Novoa (1983). Although *D. plexippus* is recorded in northern Europe, especially Great Britain, every year, there is no evidence that the species has ever bred, outside the artificially maintained colonies in "Butterfly houses".

Verdugo (1984) has suggested that the species must have been present for many years, with the recent population increase corresponding to a period of drought in the Iberian Peninsula. We challenge this view,

MALAGA (altitude 34 m)					
	Temperature °C (1931-1960)				
Month	Means			Absolute	
	Day	Max.	Min.	Max.	Min.
J	12.5	16.5	8.5	29.0	0.0
F	13.2	17.1	9.3	27.0	0.0
M	15.0	18.8	11.1	27.8	3.0
A	16.7	20.5	12.8	31.8	5.2
M	19.3	23.3	15.2	34.0	7.6
J	22.8	26.6	19.0	39.0	12.0
J	25.2	29.2	21.3	40.6	12.0
A	25.6	29.8	21.6	40.4	12.0
S	23.5	27.5	19.6	39.6	11.0
O	19.7	23.4	15.9	34.6	4.2
N	15.8	19.7	11.9	29.4	4.0
D	13.3	17.1	9.4	29.2	2.0
Year	18.5	22.4	14.6	40.6	0.0

TARIFA (altitude 20 m)					
	Temperature °C (1945-1960)				
Month	Means			Absolute	
	Day	Max.	Min.	Max.	Min.
J	13.1	16.2	10.1	22.3	1.8
F	13.7	16.8	10.6	24.7	-2.1
M	15.0	18.1	12.0	23.4	3.1
A	16.2	19.5	13.0	25.6	6.2
M	18.3	21.7	14.9	28.3	8.0
J	20.9	24.4	17.5	30.8	15.2
J	23.0	26.5	19.6	35.3	14.4
A	23.5	27.0	20.0	37.0	15.0
S	22.3	25.6	19.0	30.8	13.8
O	19.8	23.0	16.7	29.1	9.0
N	16.9	19.8	14.0	27.8	6.8
D	14.3	17.2	11.4	23.6	3.2
Year	18.1	21.3	14.9	37.0	-2.1

Table 1. Temperature variations in Málaga and Tarifa (after Font, 1983a).

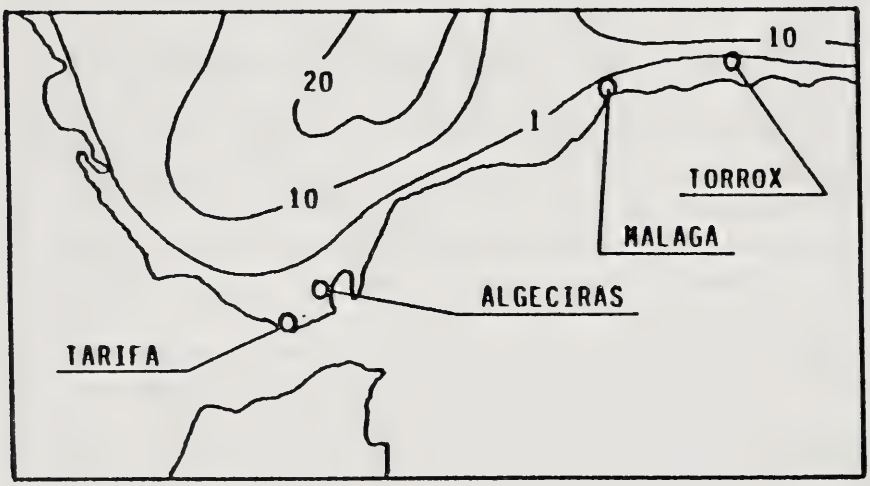

Figure 1. Number of days each year on the Iberian Peninsula when the minimum temperature is below 0°C (after Font, 1983b).

particularly in relation to the known biology of the butterfly and its foodplant. It is also inconceivable that such a conspicuous species would have been overlooked for such a time — the previous immigration being in 1973. Verdugo also cites information from local farmers to support his theory. Our evidence suggests that farmers are somewhat unreliable, many being unable to distinguish the various species of butterfly, and often confusing the larva of *plexippus* with that of *Papilio machaon,* which feeds locally on fennel.

Possibly evolution of the *D. plexippus* population

The status of the foodplant *A. curassavica* must be regarded as precarious. It occupies marginal zones in areas of high human

population and intensive agriculture, with the consequent problems of pollution from pesticides and urban waste. The plant also needs a permanently damp base, and the intermittent needs of agricultural irrigation do not always provide this condition. The autumn defoliation by larvae of *D. plexippus* may also stress the plants, although this is normal on the American continent (Morse, 1985).

The absence of *plexippus* in the area surrounding Algeciras is also interesting, as the foodplant is present and, geographically, colonising individuals should pass through this area. The impact of tourism on this area has been modest, and the agriculture remains traditional. Perhaps the significant tree cover makes the area unattractive for what is essentially an insect of open ground. In contrast, the impact of tourism on most of the *plexippus* areas has been high; agriculture is more intensive, and there is considerable irrigation and use of fertilizers. It is perhaps this last factor, combined with progressive deforestation, which gives the clue: according to Ackery and Vane-Wright (1984), *plexippus* is typical of open and nitrophilous zones, an accurate description of these areas.

There appears to be no effective competition for foodplant as, apart from the aphid *Aphis nerii* (which also feeds on *Nerium oleander*) no other invertebrates have been found regularly feeding on *A. curassavica*. The only other asclepiad supporting larvae is *Gomphocarpus fruticosus* (Machado, 1985), but this South African introduction is quite rare. No other host plants have been confirmed in Spain.

The presence of *plexippus* (as a pollinating insect) may well favour the spread of *A. curassavica*, within reasonable physical and climatic limitations, as although the effectiveness of *plexippus* as a pollinator has been questioned (Kwephart, 1983; Morse and Fritz, 1983, Morse, 1985), it is probably adequate for the needs of the plant. This in turn will tend to stabilise the colony of "European" *plexippus,* by a feedback mechanism.

We are faced with an interesting ecological "experiment", with the introduction of two alien species, one plant and one insect, both strongly interrelated, and relatively isolated from the rest of the flora and fauna.

References

Ackery, P.R. and Vane-Wright, R.I. 1984., *Milkweed Butterflies*. British Museum (Natural History).

Arrebola, F. 1982a.Capturas de *Danaus plexippus* L. en la provincia de Málaga (Torrox). *Shilap. Revta. lepid.* **10**: 321-322.

—, 1982b. *Danaus plexippus* L. en una colonia de *Danaus chrysippus* L., en Torrox (Málaga). *Shilap Revta. lepid.* **11**: 77-78.

—, 1983. Capturas de *Danaus plexippus* L. en una colonia de *Danaus chrysippus* L. en Torrox (Málaga). *Shilap Revta. lepid.* **11**: 131.

Bretherton, R.F. and Chalmers-Hunt, J.M. 1982. The monarch or milkweed butterfly (*Danaus plexippus* L.) in 1981. *Entomologist's Rec. J. Var.* **94**: 81-87.

—, 1986. The immigration of Lepidoptera into the British Isles in 1985. *Entomologist's Rec. J. Var.* **98**: 223-230.

Chittenden, F.J. (ed.) 1977. *Dictionary of Gardening*. Vol.1. Clarenden Press, Oxford.

Eiroa, M.E. and Novoa, F. 1983. Nueva cita de *Danaus plexippus* L. en la Peninsula Ibérica. *Boletin Asoc. esp. Entom.* **7**: 322.

Fernandez, E.H. 1982. Notas lepidopterológicas del Noroeste peninsular (II). *Shilap Revta. lepid.* **10**: 315-320.

Font, I. 1983a. *Climatologia de Espana y Portugal*. Inst. Nac. Meteorologia, Madrid.

—, 1983b. *Atlas Climático de Espana*. Inst. Nac. Metereologia, Madrid.

Gonzalez, F.; Albert, F. and Lencina, F. 1980. Un nuevo lepidóptero para la fauna ibérica: *Danaus chrysippus* L. *Shilap Revta. lepid.* **8**: 1-3.

Guinea, E. and Ceballos, A. 1974. *Elenco de la Flora Vascular Espanola*. Icona, Madrid.

Hanus, E. 1984. *Danaus chrysippus* L. à Málaga. *Alexanor* **13**: 174.

Kephart, S.R. 1983. The partitioning of pollinators among three species of *Asclepias*. *Ecology* **61**: 120-133.

Leestmans, R. 1975. Etude biogeographique et ecologique des Lépidoptères des iles Canaries (Insecta Lepidoptera). *Vieraea* **4**: 9-116.

Lencina, F., Albert, F. and Gonzales, F. 1983. Nuevas citras y observaciones sobre *Danaus chrysippus* L. *Shilap Revta. lepid.* **11**: 245-248.

Machado, J. 1985. Cria en cautividad de *Danaus plexippus* L. procedentes de Torrox (Málaga). *Shilap Revta. lepid.* **13**: 312.

Martin, J. 1983. Confirmación de la cria de *D. plexippus* en la Peninsula Ibérica (Lep.: Danaidae) *Graellsia* XXXIX: 193-194.

Martinez, J. 1980. Nota de Redacción. *Shilap Revta. lepid.* **8**: 1-3.

Martinez del Pino, M. and Moreno, D. 1984. Localización de una colonia de *Danaus plexippus* L. en la Provincia de Tarragona. *Shilap Revta. lepid.* **12**: 227-228.

Maso, A. and Perez, J.J. 1984. Migració de *Danaus chrysippus* a la costa catalana: espècie nova per a Catalunya. *Treb. Soc. Cat. Lep.* **6**: 55-63.

Monserrat, V.J. and Montes, C. 1983. Una nueva colonia de *Danaus chrysippus* en la Península Ibérica (Lep., Danaidae). *Boletin Asoc. Esp. Entom.* **7**: 324.

Morse, D.H. 1985. Las Asclepias y sus visittantes. *Investigación y Ciencia* (Spanish edition of *Scientific American*), **108**: 80-88.

—, and Fritz, R.S. 1983. Contributions of Diurnal and Nocturnal Insects to the Pollination of Common Milkweed (*Asclepias syriaca* L.) in a Pollen-limited system. *Oecologia*. **60**: 190-197.

Ochotorena, F. 1983. El *Danaus chrysippus* L. en la provincia de Murcia. *Shilap Revta. lepid.* **11**: 124.

Sheldon, W.G. 1935. The foodplant of *Danaus plexippus* L. in Tenerife and the period of emergence of the imago. *Entomologist* **68**: 287.

Tapia, P. 1982. *Danaus chrysippus* L. y *D. plexippus* en la provincia de Málaga. *Shilap Revta. lepid.* **11**: 145-146.

—, 1983a. Los Danaidos de Espana: resumen de observaciones. *Shilap Revta. lepid.* **11**: 145-146.

—, 1983b. Observaciones complementarias sobre los Danaidos de Torrox. *Shilap Revta. lepid.* **11**: 256.

—, 1984. Nuevas observaciones en la colonia de Danaidos de Torrox. *Shilap Revta lepid.* **12**: 58-62.

Torres, J. 1980. Noticias de Cádiz y Málaga. *Shilap Revta. lepid.* **7**: 286.

—, 1981. De nuevo *Danaus chrysippus* en Espana. *Shilap Revta. lepid.* **9**: 36.

Tuttin, T.G. et al. 1972. *Flora Europaea* **3**. University Press, Cambridge.

Verdugo, A. 1984. Cria en cautividad de *Danaus chrysippus* L. y *Danaus plexippus* L. procedentes de Torrox (Málaga). *Shilap Revta. lepid.* **12**: 153-158.

Wells, S.M., Pyle, R.M. and Collins, N.M. 1983. *The IUCN Invertebrate Red Data Book*. IUCN, Cambridge.

NEW SYNONYMS IN THE *MEGASELIA DAHLI* COMPLEX (DIPTERA: PHORIDAE) AND TWO SPECIES NEW TO THE BRITISH LIST

By R. H. L. Disney*

Megaselia dahli (Becker) and its relatives have given rise to much difficulty in the recognition of the species. Colyer (1954) attempted to clarify the identity of *M. dahli* but, as I report below, only added further to the confusion. Schmitz and Beyer (1965) dealt with this complex in their key to the species of their "Gruppe der Crassitarsalen". Couplets 40 - 56 cover the *M. dahli* complex. However this key has proved largely unworkable in practice, apart from the species with highly distinctive features. For example the distinctive flange on the fore metatarsus of *M. cothurnata* Schmitz allows immediate recognition of this species.

In order to make sense of the confusions I have assembled series of slide-mounts of the species of this complex, including re-mounts of a number of types. These have allowed considerable clarification, leading to recognition of misidentifications, new synonyms and two species new to Britain.

Megaselia dahli (Becker, 1901)

Megaselia humilis (Wood, 1909). **Syn. nov.**

Megaselia hibernica (Schmitz, 1938). **Syn. nov.**

Megaselia hyalipennis auctt. nec. (Wood, 1912) misident.

Colyer (1954) reviewed the three 'species' *M. dahli, M. humilis* and *M. hibernica*. However the differences reported were trivial and have proved unworkable in practice. Accordingly the lectotype of *M. humilis* has been remounted, along with a specimen of *M. hibernica* collected by Schmitz and labelled "Tullabeg 20.6.39 Ireland". Colyer's remounts of the hind leg, wing and hypopygium of the male "topohyle" (=topotype) of *M. dahli* have been examined. In addition a lectotype for *M. hyalipennis* has been designated and remounted (see under *M. conformis* below).

With these re-mounts and series of slide-mounts of freshly collected specimens it has proved possible to sort the specimens into species on the basis of fine details of the penis complex. One is then able to establish which characters consistently correlate with these different types of penis. Furthermore the small differences in the wings and fore-legs reported by Colyer (1954) are found to be totally inconsistent and clearly represent nothing more than intraspecific variation.

Two species can reliably be distinguished from the rest of the complex, in the male sex, by examination of the hind femora. *M. dahli* and *M. pilifemur* (Lundbeck) whose lectotype I have remounted, have almost bristle-like hairs beneath the second quarter to middle third, in

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part arranged in two to three rows (the supplementary rows being on the anterior face) — figs. 1 and 2. In the other species the hairs beneath the hind femur are in a single row and not so crowded (e.g. figs.3 - 5). *M. dahli* and *M. pilifemur* are distinguished by a number of features including the hairs beneath the hind femur being twice as numerous in *M. dahli* (cf. figs 1 and 2) and there being four or more bristles on the axillary ridge of the wing, in contrast to three or fewer in *M. pilifemur*.

No character has been found that allows separation of *M. humilis* and *M. hibernica* from *M. dahli* and so it must be concluded that these are both synonyms of the latter species.

With clarification of the characters allowing ready recognition of *M. dahli* it is apparent that numerous specimens in museum collections are misidentified. In particular specimens attributed to *M. dahli* by Disney and Davies (1979) and Disney et al (1981) are now found to be *M. hyalipennis*.

Megaselia conformis (Wood, 1909)

Megaselia carpalis (Schmitz, 1919)

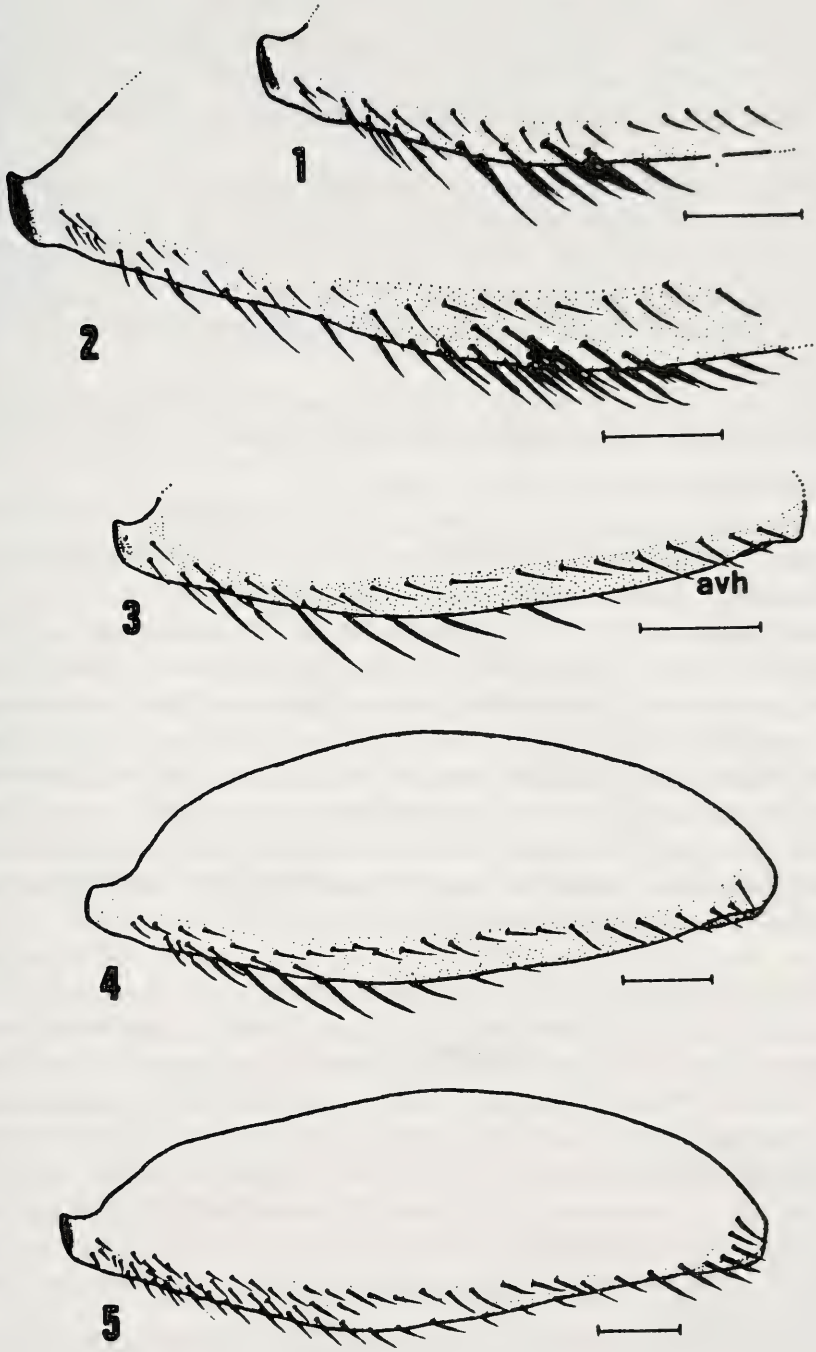
Megaselia hyalipennis auctt. nec (Wood, 1912) misident.

In the keys of Lundbeck (1922) and Schmitz and Beyer (1965) *M. conformis* and *M. hyalipennis* are separated on the colour of their palps. Those of *M. conformis* are supposed to be black and those of *M. hyalipennis* yellow to pale brown. Having remounted co-types of both species, and having designated lectotypes, consistent differences in the penis complex have been discovered. This allows recognition that the palps may be brown to dark brown in *M. conformis*. Furthermore the illustration of the male hypopygium of *M. conformis* given by Schmitz and Beyer (1965, fig. 329) would appear to be of a specimen of *M. hyalipennis*. The dark process of the penis complex is tapered and bare, and has a contrasting pale border in *M. hyalipennis*. In *M. conformis* it is short, rounded and has small denticles. Correlated with these differences is the presence of a short, hairy, posteriorly-directed lobe on the left side of the hypandrium in *M. conformis,* whereas in *M. hyalipennis* this lobe is minute and hairless.

With these clarifications many misidentifications have been revealed. For example the '*M. hyalipennis*' reported visiting flowers (Disney, 1980) have proved to be *M. conformis*.

Megaselia speiseri Schmitz, 1929

This species is keyed out by Schmitz and Delage (1974) at couplet 32 of "Abteilung V". However the text (Schmitz and Delage, 1981) gives the costal cilia as 0.11mm, which would mean the species ought to have run to couplet 14. Furthermore the key erroneously states that the metatarsus of the front leg is "ebenso breit wie f" when it should have read "wie t". Specimens with the costal index up to 0.44 or more would key out in Schmitz's (1958) key to "Abteilung IV, Erste Reihe" at couplet 15, along with *M. intercostata* (Lundbeck), *M. crassipes*



Figs. 1 - 5. Anterior faces of hind femora (in part, or entire in outline only) of males of the *Megaselia dahli*-complex. 1. *M. pilifemur*. 2. *M. dahli*. 3. *M. subcarpalis* (avh = antero-ventral hairs). 4. *M. intercostata*. 5. *M. protarsalis*. *(Scale lines = 0.1mm).*

(Wood) and *M. subcarpalis* (Lundbeck), (see below). Lundbeck's two species are immediately distinguished by the long hairs beneath the basal half of the hind femur; and *M. speiseri* is distinguished from *M. crassipes* by having more than nine hairs on the left cercus and a strong bristle near the lower margin of the left side of the epandrium in the male.

With these clarifications I am able to report the first two specimens of *M. speiseri* from Britain. The first was collected by Mr D. Lewis at the Charnwood Lodge Reserve, Leicestershire (Grid ref. 43/4615) 2 August 1977. The second was collected by the author at the Craigellachie National Nature Reserve, Inverness (Grid ref. 28/891116) 13/16 July 1982.

This species has previously been recorded from Austria, Poland, Sweden and the Central European part of the USSR.

Megaselia subcarpalis (Lundbeck, 1920, p.7).

Megaselia manicatella (Lundbeck, 1920, p.132) **syn. nov.**

Megaselia sunmanicata (Lundbeck, 1920, p.20) nec Malloch, 1914

Megaselia crassipes auctt., nec (Wood, 1909).

I have remounted the lectotypes of both *M. manicatella* and *M. subcarpalis*. There is no doubt that these are the same species. The confusion has arisen because the arbitrary division of *Megaselia* species into those with a "long costa" (costal index 0.44 or more) and those with a "short costa" (costal index less than 0.44) does not allow for species whose range of variation crosses this boundary. Schmitz and Delage (1974) gave the range for *M. manicatella* as 0.40 - 0.43. However the lectotype has an index between 0.44 and 0.45. The lectotype of *M. subcarpalis* has an index between 0.45 and 0.46.

In the keys of Schmitz (1958) both lectotypes run to *M. crassipes* (Wood) in "Abteilung IV. Erste Reihe". However the latter species not only has a distinct posteriorly-directed, hairy lobe from the left side of the hypandrium but also the hairs beneath the basal half of the hind femur are only about as long as the antero-ventral hairs of the apex. In *M. subcarpalis* these hairs are clearly longer (fig. 3), as in *M. intercostata* (Lundbeck) (fig. 4). The latter species keys out with *M. crassipes*. *M. intercostata* differs from *M. subcarpalis* in having hairs, not bristles, on the epandrium, and having four or more bristles on the axillary ridge of the wing. In *M. subcarpalis* there are three or fewer bristles on this ridge.

Schmitz and Beyer (1965) include *M. subcarpalis* in their keys to "Abteilung IV. Zweite Reihe". However these two groups are distinguished on the basis of the length of the costal cilia, with the "Zweite Reihe" having these 0.125mm long or more. In the text, however, these cilia are given as 0.09 - 0.1mm for *M. subcarpalis* (and as 0.08mm for *M. manicatella* — see Schmitz and Delage, 1974 — "Abteilung V"). The reason for not placing *M. subcarpalis* in the

"Erste Reihe" would seem that the cilia look "long", but (because of the small size of the species) are found to be "short" when actually measured. The same error creates problems at couplet 2 of Schmitz and Delage's key to "Abteilung V". Only by going the wrong route (i.e. by pretending it has "long" costal cilia) can one run to *M. manicatella*. The correct route leads to obvious error.

Having clarified the recognition of *M. subcarpalis*, and having established *M. manicatella* as a synonym, it is necessary to justify the presence of this species on the British List. The original basis for its inclusion was a specimen in the Wood collection collected 11 August 1912 at Tarrington, Herefordshire and subsequently identified as "*Megaselia manicatella*". I have re-mounted this specimen and found it to be *M. crassipes*. However, two males collected by Dr A. G. Irwin at Kirkby Malham, North Yorkshire (Grid ref. 34/890613) in June 1983 have proved to be this species.

Megaselia valvata Schmitz, 1935
nigripalpis Schmitz, ante 1935 nec (Lundbeck, 1920)

This species is close to *M. nigripalpis* (Lundbeck) but lacks the hairy lobe projecting rearwards from the left side of the hypandrium of the latter species. *M. valvata* also resembles *M. protarsalis* Schmitz, which also has short hairs beneath the basal half of the hind femur (fig. 5). However in *M. valvata* the fore tarsus is entirely dark, whereas in *M. protarsalis* the first four segments are somewhat yellowish in contrast to the darkened fifth segment. A distinctive feature of *M. valvata* is that the spine-like hairs at the base of the posterior face of the hind metatarsus are somewhat disordered and some are inclined ventrally (fig. 6). In *M. protarsalis* they are more ordered and are inclined distally as normal (fig. 7).

I have remounted a specimen of *M. valvata* from the Schmitz collection and also the holotype of *M. nigripalpis* in order to check the identity of two males of *M. valvata* collected by P. J. Chandler at Blickling Hall, Norfolk (Grid ref. 63/1828) on 14 October 1983. These represent the first records of this species from Britain. The species has previously been recorded from Austria, Czechoslovakia, Germany, Norway, Poland, Sweden and Finland.

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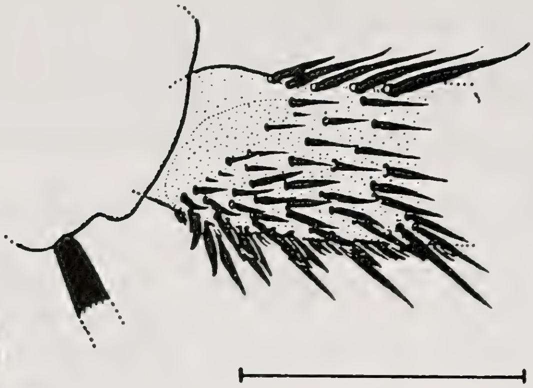

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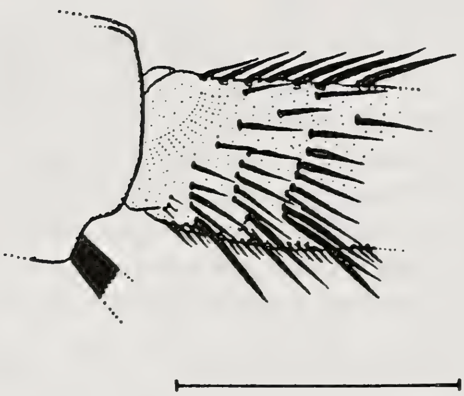

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Fig. 6 - 7. Posterior face of base of hind metatarsus in males. 6. *Megaselia valvata*. 7. *M. protarsalis*. (Scale lines = 0.1mm).

References

Colyer, C.N., 1954. The problem of *Megaselia (Aphichaeta) dahli* (Becker, 1901) and *M. (A.) humilis* (Wood, 1909) (Dipt., Phoridae). *Entomologists' mon. Mag.* **90**: 121-128.

Disney, R.H.L., 1980. Records of flower visiting by scuttle flies (Diptera: Phoridae) in the British Isles. *Naturalist, Hull* **105**: 45-50.

Disney, R.H.L., Coulson, J.C. and Butterfield, J., 1981. A survey of the scuttle flies (Diptera: Phoridae) of upland habitats in Northern England. *Naturalist, Hull*, **106**: 53-66.

Disney, R.H.L. and Davies, L., 1979. Scuttle flies (Diptera: Phoridae) from St. Kilda. *Glasg. Nat.* **19**: 485-488.

Lundbeck, W., 1922. Hypocera, Phoridae. *Diptera Danica* **6**: 69-455.

Schmitz, H., 1958. In Lindner, E. (Ed.). *Die Fliegen der palaearktischen Region, 33, Phoridae. Lief.* **202**: 465-512.

Schmitz, H. and Beyer, E., 1965. *Ibid. Lief.* **258, 260**: 513-608.

Schmitz, H. and Delage, A., 1974. *Ibid. Lief.* **301**: 638-664.

Schmitz, H. and Delage, A., 1981. *Ibid. Lief.* **325**: 665-712.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1987

By R.F.Bretherton* and J.M. Chalmers-Hunt**

1987, with a very late spring, a cold and sunless summer, and an early autumn with great gales and heavy rains, has the reputation of being one of the poorest seasons for Lepidoptera in recent times, except perhaps in the south western counties. Immigrant species shared in this poverty until the middle of August and, though there was some improvement later, recorded numbers of most remained below normal. There were exceptions. A major event was the abundance of *Rhodometra sacraria* L., of which more than 800 have been reported; the September invasion of *Agrius convolvuli* L. was perhaps above normal; and of the common butterflies, *Vanessa atalanta* L. had a good year.

Of the rarities, a single *Iphiclides podalirius* Scop., which may have been immigrant, was found on a pavement at Walthamstow, South Essex on July 5; two *Apamea lateritia* Hufn. were caught at Dovercourt, South Essex on July 7 and 24; there was a small invasion of *Hyles gallii* Rott. at the end of July, curiously spread from South Devon to Shetland; one *Chrysodeixis chalcites* Esp. at Portland, Dorset, September 13; three *Diachrysia orichalcea* Fab. in South Hampshire, Surrey and Isle of Wight, August 15 and 25, September 20; and a single *Hypena obsitalis* Hb. at Perranporth, South Cornwall, November 8. But there were this year no additions to the British list.

There were many reports of possible immigrant examples of resident species, including a fresh *Nymphalis polychloros* L. at Radipole, Dorset, on May 5, and two at Bradwell-on-Sea, Essex on April 24; a single *Idaea ochrata* Scop. at Axbridge, South Devon, July 21; singles of *Enargia paleacea* Esp. at Walberton, West Sussex and Dartford, West Kent on July 14 and 15; and of the Crambid *Platytes alpinella* Hb. at Axminster, South Devon and Horsmonden, West Kent, on these same dates.

The small numbers of species, and of individuals of most of them reported, seem to reflect small size of the immigrations rather than a lack of them. Five *Cynthia cardui* L. were seen between March 3 and 21. A small immigration in the first week of April and in early May included many *Vanessa atalanta* L. and *Plutella xylostella* L., but only few *Colias croceus* Geoffroy, *Cynthia cardui* L., *Macroglossa stellatarum* L., *Peridroma saucia* Hb., *Autographa gamma* L., *Agrotis ipsilon* Hufn. and *Udea ferrugalis* Hb. In contrast to the great immigration of April 1985, this included none of the scarcer species and may have come from France in mainly south and south east winds. A

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further small influx in mid May added singles of *Mythimna vitellina* Hb. and *Agrius convolvuli* L., both in West Sussex.

Larger ones at the end of that month and again in the second half of June, repeated most of the common species and included most of the single examples of *Acherontia atropos* L. which were reported this year, and also the largest concentrations of *M. stellatarum* and the first *Spodoptera exigua* Hb., which was curiously far north at Spurn Point, South East Yorkshire. But only the end of July saw the first considerable influx of a scarcer species, *Hyles gallii* Rott., of which all the nine imagines reported were between July 24 and 31, and may have produced the large larvae found on September 9 and October 10. These were apparently accompanied by further large batches of *V. atalanta* and *P. xylostella* and by a few *C. croceus, P. saucia* and a single record of *H. livornica.*

The great immigrations of *R. sacraria* L. began on August 16 and the records reached their first peak on the nights of August 21 to 24. There was a second wave in the first days of September and a third, much the largest, from September 17 to 21. After that the records fell away sharply for the rest of the month, with a further small rise from October 5 to 7; a few singles reported at the end of it, when *O. obstipata* showed its only considerable numbers and *P. saucia* was still very numerous. The season appeared to have been closed by prolonged cold nights and northerly winds, throughout November and the first half of December. There was, however, a surprising aftermath with the return of mild and south westerly winds in the last ten days of the year, when about a dozen *C. cardui* were seen, spread along the south coast from Cornwall to Sussex. No immigrant moths were reported, but this may have been due only to a lack of nocturnal observation at that time.

Of the common butterflies *Vanessa atalanta* had a good year. The first noted was on March 31, the last on December 31, in Mayfair, London. Its range northwards reached to Keiss in Caithness as early as April 24, the Isle of Canna on May 14, with fully grown larvae in mid July and one inside a window on December 9, and Ross-shire, Sutherland and Orkney in June and July with further records later. There were clearly defined immigrations in late April, including some seen flying into Dorset on April 24; at the end of May and in early June; another in the last days of July and the first of August. On August 20, in East Cornwall some 200 were seen on Eame Head, and in early September over 300 were counted along a cliff path between Seaton and Looe and a further 500 on Penlee Head on September 26; in South Devon, on September 18 an estimated 500 were seen coming over the cliffs between Sour Mill Cove and Salcombe, and on September 27 100 at Start Point. By then it was almost ubiquitious along the south west coast; but from Dorset eastwards and in inland counties the numbers reported were never large. Up the east coast it was noted only thinly in East and West Norfolk and at Spurn Point, South East Yorkshire. Very

few larvae were reported, and though the scatter and dating of records indicates that local breeding must have made some contribution to the total abundance, it was much less than that from primary immigration.

Cynthia cardui was first noted, singly on March 3 at Porton, Wilts and shared in later immigrations of *V. atalanta,* but was always very much scarcer and was usually seen only singly even along the south coast. Inland it was seen in Bedfordshire, Berkshire, Middlesex, Surrey, Worcestershire, Warwickshire, and the most northerly coastal record was of six at Spurn Head, Yorkshire. It did, however, end the year with a surprise influx from December 18 to early January 1988 along the south coast from Cornwall to Sussex. As numbers of *C. cardui* so late in the year are virtually unknown, we have summarised over twenty records at the end of Annexe II. Most of them seem to have been rewards for post prandial strolls on Christmas Day.

C. croceus was seen singly at Axminster, South Devon, April 29, Christchurch, Hants, May 13, near Swanage, Dorset, May 26, and again at Axminster, June 26; but the first sizeable influx came only from July 31 to August 8, when a dozen were reported. There were some more in mid August, with the largest record of the year, about 20, at Weymouth, Dorset on August 19. After that it was fairly numerous in the south western counties, the last being at Axminster on October 26. Elsewhere it was very scarce, East Sussex, eight, July 30/August 8; Middlesex, three; South Wilts, three, August 15/October 10; singles only in south Hants; West Kent, 31.8; Carmarthen 26.9; Pembroke, 27.9; Berks, 31.8; Worcestershire, 26.9; Guernsey 1.10. The year's total of under 100 was much lower than normal, and local breeding anywhere was unlikely.

Of the common moths, *Autographa gamma* L. alone had a fairly good season. Nine were noted from April 19 to 30, at Rogate, West Sussex, Wareham Forest, Dorset, Ringwood, Hants, Fernham, Berks, Axminster, South Devon, and Leigh, Surrey. Late May and early June arrivals were perhaps up to the average. It was common as far north as Orkney from June 6 to early October, and five full-grown larvae were found on September 19. Large influxes were noted from July onwards along the south coast, where it became generally abundant, as for example near Salcombe, Devon, where on September 18, a swarm of 150 - 200 were feeding from a small patch of thistles on the cliff top. The last was noted on December 4 on a fence at Surbiton, Surrey.

Agrotis ipsilon was first seen at Ringwood, Hants and Worth Matravers, Dorset on March 24 and 26; then in April in several places, including one in Orkney on April 15, after which it was widespread but nowhere really common. The last were seen at Sandwich Bay, Kent and Woldingham, Surrey on October 27. *Peridroma saucia* was also seen in April, at South Croydon, Surrey, but it was very scarce until mid

August, but continued until late October, with the last in South Essex on November 17.

The diurnal *Macroglossa stellatarum* was only once noted in April, this at Worth Matravers over narcissi on April 28, but the influxes which are usual in late May and through June gave about 40 records and several females were seen ovipositing, including one on 14.6 at Swanage, Dorset on Madder. It was numerous also in July, but thereafter numbers fell and their dates were much spread, indicating that some at least of those seen may have been offspring of earlier arrivals. The last were seen on St Mary's, Scilly on October 22 and 23. Moths were reported in all the south coastal counties and in Essex in the east.

Surprisingly, one was also found on a ship at Stackpole, Orkney on July 28. Inland the only reports of it were in North Hants, at Leckford, July 2, September 12, in Warwickshire at Charlecote, June 22 and 27, July 30 and 31, and at Worcester, a larva. The total of under 100 reported in the year was rather below average.

The Tineoid *Plutella xylostella* was common during the April immigration and was reported in many places later, reaching a peak in the last half of July but declining rapidly later until the last was noted at Burghclere, North Hampshire, on October 10. Though clearly some of them came in as immigrants, especially in April and July, the general pattern of the records suggests that many others resulted from local breeding either by permanent residents or earlier arrivals. Its range extended on the eastern side to Yorkshire, Ross-shire and Orkney.

The usually abundant Pyralid *Nomophila noctuella* attracted attention by its unwonted scarcity. Several observers reported its complete absence from their traps. Though it was first reported at Winchester on April 28, and the numbers improved somewhat in mid September, it was nowhere really common and the last were seen as singles at Ninfield, East Sussex on October 30 and 31. *Udea ferrugalis,* after the first at Trebrownbridge, West Cornwall on April 30 was scarce until early August, after which numbers built up well through September and October and the last were seen at Bramley, Surrey on November 8 and Bradwell-on-Sea, Essex, on November 11. The Noctuid *Peridroma saucia* showed a rather similar pattern. From the first at Coulsdon, Surrey, April 30 it was hardly noted until the end of July and early August, but built up to approach its usual frequency through the autumn to the last at Bradwell-on-Sea on November 12. This was mainly along the south coast, but it also reached Beetham, Westmorland and inland in Berks, Wilts, Herts, Bucks, Warks, and on the east coast Spurn Point, Yorkshire, where the only sighting was one on November 2.

The scarcer species are fully detailed in Annexe II, but the great influx of *Rhodometra sacraria* requires special mention. Its total of over 800 accounts for three quarters of all those listed. This is below that for the

last year of abundance in 1983 (c.1090) and for the highest known in 1947 (c.1250). But in both those years considerable immigrations began in July and earlier, whereas in 1987 the first were seen only in mid August and, except possibly for half a dozen at the end of August all must have been primary immigrants. Though they were reported by some seventy observers, most were at regularly operated light traps. The presence or absence of these no doubt distorts somewhat the numbers for each county. But it is clear that the main points of arrival were along the south coast, especially from South Devon eastwards, and in South Essex; only singles were seen as far north as Westmorland and South East Yorkshire. Inland there were very few except in North Hants, Berks and Surrey, and mainly only singles in Herts, Middlesex, Northants, Oxon, Wilts and Works. The main home of *R. sacraria* abroad is believed to be in North Africa, but in 1987 records of other immigrants likely to have come from there seem to have been associated with it.

Agrius convolvuli, with c.140 reported, and *Mythimna vitellina,* with 52, were perhaps in normal numbers, both mainly in the autumn. *Helicoverpa armigera* with 22 reported was certainly above normal, and *Hyles gallii,* though only nine moths and some larvae were seen, is interesting for its concentration of arrivals in the last days of July combined with their very wide scatter between South Devon, Sussex, Kent, Berks, Norfolk, Notts, Westmorland and Shetland.

There are broad similarities between 1986 and 1987 both in weather conditions and in the numbers of wholly immigrant scarce species recorded, 28 and 27 respectively, but also large differences. 1987 had its great number of *R. sacraria* and good showings of *A. convolvuli* and *M. vitellina,* both of which were scarce in 1986 when *H. peltigera* was the only species with large numbers: in 1987 only one was reported. But 14 of the other scarce species which were present in 1986 were not seen in 1987, in which 11 species seen were not present in 1986. The usually common immigrants were present in both years, but *V. atalanta, A. gamma* and *P. saucia* were markedly more numerous in 1987, while *C. croceus* was hardly seen before August and was much scarcer later even in the south west, with a total of only about 150 reported against over 200 in 1986. These differences in composition in numbers are hard to explain. The great 1987 abundance of *R. sacraria,* coming with "Sahara dust" from mid August onwards must surely have been due to abnormal circumstances in its African homeland, and the abundance of some other species from mid September onwards may have been due to several very strong south west gales, though the "hurricane" of October 15 over south and south east England seems to have had little discernible effect on numbers.

ANNEXE I

Names of Recorders

Arnold, N., Badmin, J., Baker, B.R., Baker, P.J., Baldock, D.W., Bascomb, K.N., Bell, R.A., Bond, K.G.M., Bowdrey, J.P., Bowley, R., Bretherton, R.F., Bretherton, M.F., Briggs, J., Brooks, Miss M.M., Brown, D.C.G., Brydon, I., Cade, Martin, Campbell, J.L., Chalmers-Hunt, J.M., Chatelain, R.G., Clarke, Dr J.H., Collins, C.B., Collins, G.A., Corley, M.H.V., Costen, Dr P.D.M., Culpin, John, Dey, D., Dewick, A.J. & S., Dobson, A.H., Dyke, R., Eastwick-Field, G.G., Else, G., Emmet, A.M., Fairclough, R., Ferguson, I.D., Finch, G.L. & M.D., Gardner, A.F.J., Greatorex-Davies, J.N., Granville, U.M.C., Green, J.E., Greenwood, J.A.C., Grey, P.R., Halsey, J. & M., Halstead, A.J., Hardy, P.B., Harmer, A.S., Harrop, Mrs M., Haynes, R.F., Heckford, R., Henwood, B., Higgs, G.E., Hornby, Dr R.J., Hunter, I , Hulme, D.C., Jenkins, A., Jones, N.R., Knill-Jones, S.A., Lane, Roger, Lane, R.E. & C.E., Langmaid, Dr J.R., Levertron, R., Lorimer, R.I., Lowe, R.T., MacFadyan, I., MacKinnon, Mrs W., Macnulty, Dr B.J. Madge, Steve, Moore, B.W., Myers, Dr A.A., Nash, S., Oates, M., Odell, S., O'Heffernan, H.L., O'Keeffe, D., Owen, Prof. J.A., Palmer, Mrs C., Palmer, S., Parsons, Mark, Paul, John, Payne, J.H., Pelham-Clinton, E.C., Penhallurick, R.D., Phillips, J.W., Philpott, V.W., Plant, C.W., Pollard, E., Pooles, S.W.P., Porter, J., Potts, P.M., Pratt, C.R., Pyman, G.A., Radford, J.T., Reed, M., Rollins, C.C., Rutherford, C.I., Simpson, Dr A.N.B., Skinner, B., Smith, E.G. & M.H., Smith, Dr F.H.N., Softly, R.A., Sokoloff, P.A., Spalding, A., Spence, B.R., Sterling, Col. D.H., Sterling, M.J., Sterling, P.H., Stirling, P.M., Swanson, S., Swift, S., Terry, M.G.W., Townsend, Martin, Tucker, N.A., Tucker, V., Walters, John, Walters, J.M., Waring, Paul, West, B.K., Williams, L.P., Wilson, D.E., Wild, E.H., Winter, P.Q., Wright, Sheila.

(To be concluded)

A NEW ASSOCIATION FOR COLEOPTERISTS — we have received details of the formation of the "Associacion Europea de Coleopterologia", whose objectives are to provide a forum for coleopterists on a world-wide scale to exchange views through Bulletins and Monographic reviews, annual meetings, lectures, symposia etc. Further details are available from the Secretary, Dr T. YeLamos, Facultidad de Biologia, Universidad de Barcelona, Diagonal 645, Spain.—Editor.

THERA CUPRESSATA GEY. (LEP.: GEOMETRIDAE) — A MOTH NEW TO MAINLAND BRITAIN — Further to the interesting and informative notes of *T. cupressata* recently published by Costen and Peet (*Ent. Rec.* **98**: 217-218), a specimen of this insect was discovered in the collection of J. Radford by Bernard Skinner. The moth had been taken at m.v. light on 1.xi.1984 at Walberton, West Sussex, and was accompanied by *Mythimna albipuncta, M. unipuncta* and *Orthonama obstipata*. It also coincided with the warmest day-time November temperature since the Second World War. COLIN PRATT, 5 View Road, Peacehaven, Newhaven, East Sussex.

A NEW BRITISH FOODPLANT FOR STIGMELLA TILIAE (FREY) (LEP.: NEPTICULIDAE) — On 5.xi.1987, whilst on a leaf-mine collecting foray in Colwick Country Park, Nottinghamshire (SK 615397), I collected two tenanted, nepticulid mines from leaves on suckers growing from a stump of *Tilia platyphyllos* (large-leaved lime). Emmet (in Heath: *Moths and Butterflies of Great Britain and Ireland* vol. 1) describes the only lime-feeding nepticulid, *Stigmella tiliae,* as feeding on *Tilia cordata,* the small-leaved lime.

The mines agreed with the description given by Emmet (*loc. cit.)* for *S. tiliae*, although the larva normally vacates the mine in October. *Stigmella tiliae* has been recorded on the continent from *Tilia platyphyllos,* but I can find no record of this foodplant being utilised in Britain. My thanks are due to Harry Beaumont and Mark Sterling for confirming my identification. A.S. BOOT, 38 Balmoral Road, Colwick, Nottingham NG4 2GD.

FREQUENCY DISTRIBUTION OF AQUATIC HEMIPTERA HETEROPTERA FROM CUMBRIA

By R. W. J. READ*

During the past four years (1982-1986) I have made a small survey of the aquatic heteroptera of Cumbria; in particular the West Cumbrian region has been more intensively studied. The area worked contains some interesting habitats and water bodies. A number of lakes, upland tarns and peat pools were investigated, and collecting was also carried out in the standing water in old disused quarries. Large ponds created in abandoned mine workings in the area were sampled as well as brackish and estuarine pools on the coast.

Collecting was done by hand net and by the use of a drag line net. A total of fifteen 10km squares were visited, and this represents for this survey 88 individual 1km squares of the National Grid.

Figure 1 shows the distribution of the 39 species collected in each of the fifteen 10km squares.

Figure 2 is the relative frequency for each of the species arranged by families recorded in 88 1km squares of the National Grid.

Acknowledgements

I wish to thank the late Dr T.T. Macan for identifying a number of corixids for me. I also wish to thank Dr Peter Kirby of the Nature Conservancy Council for his help with determinations, and express my thanks to the Cumbria Trust for Nature Conservation in allowing me access to a number of their nature reserves in West Cumbria.

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SPECIES	NX90	NX91	NY00	NY01	NY10	NY11	NY20	NY25	NY33	SD08	SD09	SD18	SD19	SD27	SD28
Hebrus ruficeps					●										
Hydrometra stagnorum			●		●							●	●	●	
Microvelia reticulata		●		●	●							●	●		
Velia caprai	●		●	●	●	●			●		●	●	●		
Velia saulii	●		●												
Gerris costai						●			●						
Gerris gibbifer			●	●	●	●					●	●	●		
Gerris lacustris		●	●	●	●	●			●		●	●	●	●	●
Gerris lateralis			●			●			●						
Gerris odontogaster			●	●	●							●	●		
Gerris thoracicus	●	●	●	●	●	●				●	●	●	●		●
Nepa cinerea	●	●		●								●			
Plea minutissima				●											
Notonecta glauca	●	●		●	●						●		●		●
Notonecta obliqua	●			●	●						●				●
Micronecta poweri				●						●		●			
Cymatia bonsdorffi					●										
Glaenocorisa propinqua				●											
Corixa dentipes					●										
Corixa panzeri					●										
Corixa punctata	●	●		●	●						●				
Hesperocorixa castanea			●		●							●	●		
Hesperocorixa linnei			●		●	●							●		
Hesperocorixa sahlbergi	●		●	●	●			●			●				●
Arctocorisa carinata					●										
Arctocorisa germari				●											
Callicorixa praeusta	●	●	●	●	●						●				●
Callicorixa wollastoni				●	●		●						●		
Sigara concinna		●													●
Sigara distincta	●	●	●	●	●	●							●		
Sigara dorsalis	●	●	●	●	●			●				●	●	●	
Sigara falleni	●	●	●	●											
Sigara fossarum			●	●											
Sigara lateralis		●	●	●	●						●	●			●
Sigara nigrolineata	●	●	●	●	●	●	●		●		●	●	●		●
Sigara scotti				●	●	●					●	●	●		
Sigara semistriata			●	●	●										
Sigara stagnalis														●	
Sigara venusta		●	●	●	●	●	●			●	●		●		

Fig. 1. Distribution of 39 species of aquatic hemiptera-heteroptera in each of fifteen 10 km squares.

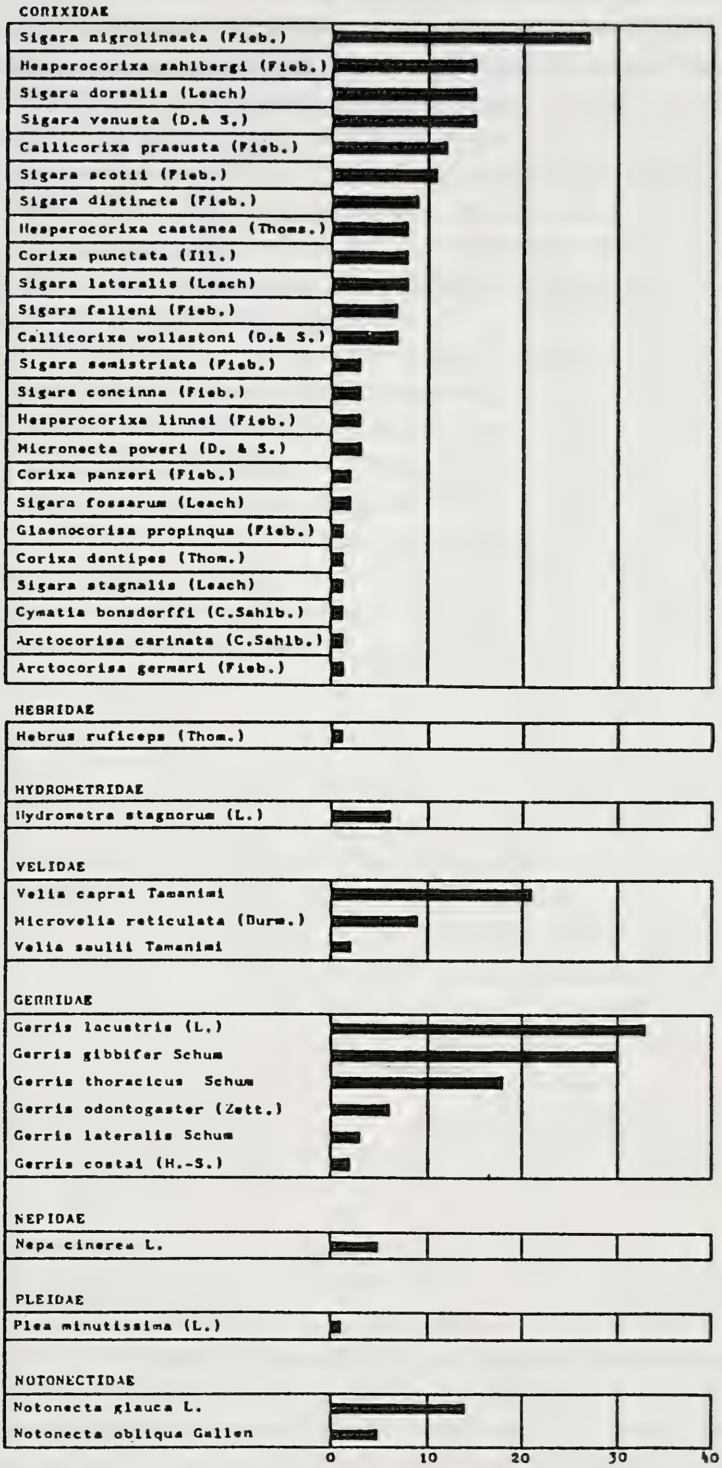

Fig. 2. Relative frequency of aquatic hemiptera-heteroptera in 88 1 km squares in Cumbria.

ADDITIONAL SCOTTISH RECORDS FOR EUDECTUS WHITEI SHARP (COL.: STAPHYLINIDAE), WITH A COMMENT ON ITS STATUS IN BRITAIN. — Further to my recent note on this species (1987 *Ent. Rec.* **99**: 96), I can now record its presence at two more Scottish sites — Aonach air Chrith, Wester Ross, where I sieved a specimen from moss and gravel at about 1020m on 11.vi.87 and Creag Meadaidh, Westerness, where I obtained a specimen from eight pitfall traps set (7.vi.87 to 6.viii.87) at 1120m. I also obtained, last summer, 19 specimens from 16 pitfall traps set (13.vi.87 to 15.viii.87) on the summit of Ben Macdui, Easterness, a site from which the beetle has already been recorded.

I have now taken this species on the summits of six widely distributed Scottish hills. I have set pitfall traps on the summits of five hills (Ben Macdui and Cairgorm, Easterness; Creag Meagaidh, Westerness; Sgurr Mohr, Wester Ross, Medall Buidhe, Perth West) and have taken, by this means, *Eudectus* at all but the last. In the literature, the species has been reported from the summits of various other Scottish hills, including Cross Graig, Rannoch, Perthshire which has an altitude of only 747m (2470ft) (Harwood, P. 1921 *Entomologist's mon. Mag.* **57**: 233). There are listed (in *Munro's tables* ed. R.M.G. Inglis, *The Scottish Mountaineering Club,* Edinburgh, 1953) 540 separate summits in Scotland over 3000ft (910m) in altitude and another 200 above 2500ft (758m) i.e. at least 740 hill summits higher that Cross Craig. Not all of these may provide homes for *Eudectus* but my findings, together with those of others, suggest that many probably do. The species was graded category R.D.B. 1 (in *British Red Data Books 2 Insects*, D.B. Shirt, Nature Conservancy Council 1987) but, in the light of present knowledge, it is difficult to see how it can really be endangered. Indeed, its traditional rarity, at least in Scotland, would seem to stem much more from the remoteness of the summits of Scottish hills and the difficulty in finding the beetle there than from genuine scarcity.

I thank Messrs D.J.M. and T.A. Owen for help in setting and retrieving the pitfall traps and Mr E.M. Mathew, Regional Officer, North East (Scotland) Region, N.C.C. for permission to carry out pitfall trapping studies on the Cairngorm and Creag Meagaidh National Nature Reserves. — J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey.

APHELIA UNITANA (HBN.) (LEP.: TORTRICIDAE) IN DEVON AND A LARVAL DESCRIPTION — On 13th June 1983 I took a male *Aphelia* sp. at Heddon's Mouth, north Devon (v.c.4). I assumed that it was *paleana* (Hbn.) because the locality was considerably outside the known range in England of *unitana*; Bradley, Tremewan and Smith ((1973) *British tortricoid moths.* Cochylidae and Tortricidae: Tortricinae) give Staffordshire as the southernmost English county. I am very grateful to Mr E.C. Pelham-Clinton who, without seeing the specimen, suggested that because of the date it might be *unitana*, which it proved to be on dissection.

A. unitana has also been found in south Devon (v.c.3). Mr E.C. Pelham-Clinton took one at light at Axminster on 28th June 1986 and has kindly allowed me to publish his record. On 27th April 1987 at Bucks Mills, Devon (v.c.4) I found several *Aphelia* sp. larvae in spun leaves of *Rubus fructicosus* agg., *Heracleum sphondylium, Rumex acetosa* and *Mercurialis perennis*. These produced one male and several female *A. unitana* between 27th and 30th May 1987. Bradley, Tremewan and Smith (*loc. cit.*) describe the forewing of the male as having a silver-grey appearance, occasionally with a slight yellowish tinge. Both my male specimens have the forewing distinctly ochreous yellow.

Bradley, Tremewan and Smith do not describe the larva. The larvae I found were about half grown and the description I made was: head light brown, marked with black posteriorly; plate black finely bisected white; body greenish black with a feint light grey subspiracular line on the first two segments, pinacula black feintly ringed light grey; anal plate black. When full grown the description was the same except that the body was black, the subspiracular line was more distinct and the pinacula were more distinctly ringed light grey. The pupa was black. — R.J. HECKFORD, 67 Newnham Road, Plympton, Plymouth.

LATHYRUS PRATENSIS L. — A HOST PLANT OF LEUCOPTERA LATHYRIFOLIELLA (STT.) AND PHYLLONORYCTER NIGRESCENTELLA (LOGAN) — The unwisdom of not looking at certain plant species because nothing is believed to feed on them was exemplified in early August 1987 when E.C. Pelham-Clinton and I found mines of both the above species on *Lathyrus pratensis* at Branscombe, Devon. *L. lathyrifoliella* is well known in the area feeding on *Lathyrus sylvaticus* L., and *P. nigrescentella* has been found on *Vicia sepium* within half a mile, although no mines were found on this plant in the immediate vicinity. Dr J.R. LANGMAID, 1 Dorrita Close, Southsea, Hants PO4 0NY.

SOME HOST PLANTS OF THE SMALL FAN-FOOT MOTH, HERMINIA GRISEALIS D.&S. (LEP.: NOCTUIDAE) IN THE WILD — My experience suggests that this is most commonly met with in the vicinity of oaks. At Park Farm, Kidlington, Oxon where oak is poorly represented it was seldom seen during ten years of light trapping (1976-1986), although it occurred regularly at light traps in surrounding woods. Hofman's records (quoted in Barrett, 1900, *The Lepidoptera of the British Isles*. **6**) of rasberry and blackberry as alternative foodplants are widely quoted (eg in South's *Moths of the British Isles* series I). Skinner, in *Colour identification guide to moths of the British Isles* gives oak and alder. Allen, 1949, *Larval foodplants*, gives only wild rasberry, although indicating that in captivity it will take a wide range of forest trees. Heath and Emmet in *MBGBI*, vol. 10 give oak "and other trees". The following records of feral larvae may therefore be of interest:

Hazel (*Corylus avellana*) — two larvae, both 1.5 cm length, beaten from large hazel bushes, over-shadowed by oak. 4.xi.1985, Oakley Wood, Bucks. Reared on hazel, pupating the same month, overwintering as a pupa and emerging mid-June the following year. Barrett questions Buckler's observation that this moth overwinters as a pupa, but this is confirmed in South, Heath and Emmet. Skinner gives an account of finding pupae in the wild. A further larva was found on hazel on this site on 19.viii.1986.

Birch (*Betula pendula*) — two larvae, both 1.5 cm length, beaten from young birch saplings growing by a path in Oakley Wood, Bucks, 14.viii.1986. The site is heavily shaded by Scots pine, and oak grows within 100 m.

Hawthorn (*Crataegus monogyna*) — one larva, 0.8 cm length, beaten from hawthorn in a mature hedgerow bordering the outer of the two Bernwood Meadows, Oxon, on 18.viii.1986. There are occasional oaks in the hedgerow. P. WARING, Nature Conservancy Council, Northminster House, Peterborough.

CATOPSILIA FLORELLA FAB. (LEP.: PIERIDAE) IN LANZAROTE, CANARY — In late November 1987 on Lanzarote I noticed a few white butterflies frequenting shrubs of *Cassia de flor amarilla* (yellow-blooming cassia). Later examination showed the butterflies to be the African migrant, *Catopsilia florella.*

The locality was the recently landscaped slopes at the new Costa Mar apartments near Puerto del Carmen on the SE facing coast of the island. A variety of shrubs had been planted in the volcanic ash within the last year, surviving only with regular watering! The only other place this butterfly was seen was around a single cassia bush in Puerto del Carmen.

The butterflies flew mainly in the morning, thereafter tending to roost, especially in shrubs of *Euphorbia pulcherrim* (poinsettia). The elongate, white ova were easily visible on the cassia bushes, and in considerable numbers. The laying rate after the first morning flight seemed quite amazing — I counted at least 20 eggs laid in a minute by a single female.

Higgins and Riley, in *A field guide to the butterflies of Britain and Europe* give *C. florella* as first recorded from the Canary Islands in 1964, but only mention the islands of Tenerife and Grand Canary. J.E. GREEN, 25 Knoll Lane, Poolbrook, Malvern WR14 3JU.

ACLERIS ABIETANA HBN. (LEP.: TORTRICIDAE) IN NORTHERN ENGLAND — Several individuals of this species have recently been caught in Rothamsted Insect Survey light traps in northern England and are listed below: Kielder Forest, Northumberland (O.S. Grid ref. NY 632 936, Site No. 296) — two in November 1985 and two in February 1986; Hamsterley Forest, Durham (O.S. Grid ref. NZ 082 311, Site

No. 425) — singletons on 30th April, 30th May and 1st June 1987 and Chopwell Wood, Tyne and Wear (O.S. Grid ref. NZ 136 582, Site No. 481) — one on 20th December 1987.

A. abietana has not previously been recorded in England (Emmet, A.M. pers. comm.) though single specimens have been caught in Perthshire in 1965 (Pelham-Clinton, E.C. (1967), *Ent. Rec.* **79**: 151-152) and 1987 (The R.I.S. trap at Kindrogan, Site No. 48, O.S. Grid ref. NO 341 299. (Ident. J. Parrack, pers. comm.)) and Aberdeenshire in 1975 (Smith, P. and Young, M.R. (1977), *Ent. Rec.* **89**: 53).

There is uncertainty as to whether or not *A. abietana* overwinters in the adult stage. Emmett (1979, *Field guide to the Smaller British Lepidoptera.* B.E.N.H.S., London: pp.159-160) states that it probably does so, and the dates of capture of these adults also suggest that this is likely.

Norway spruce (*Picea abies*), on which the larva feeds, is very common in the vicinity of the traps and it is interesting to note that *Eupithecia abietaria* Goeze (Lep.: Geometridae), which is another very localised spruce-feeding species, is also known to occur at some of these sites.

Thanks are extended to J. Parrack and T.C. Dunn for identifying the specimens along with the other microlepidoptera from several of our traps; D. Kerr and B. Walker who operate the traps at Kielder, (D.K.) and Hamsterley and Chopwell (B.W.); T. Hancock for confirming the identifications of *A. abietana* and to A.M. Emmet for his comments on this species. ADRIAN M. RILEY, Entomology and Nematology Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ.

A RELICT OLD FOREST BEETLE FAUNA FROM LYDNEY DEER PARK, GLOS. — A large well-rotted fallen ash trunk in Lydney Deer Park, W. Glos. (SO 615025), on 14th June, 1987, produced three beetles listed in *British Red Data Books:* **2**, *Insects* (Shirt, D.B., ed., 1987, N.C.C.): a single *Aeletes atomarius* (Aube), new to Gloucestershire; two adult *Prionocyphon serricornis* (Muller, P.W.J.) with pupae, the second county record; and larval *Ampedus ? cinnabarinus* (Eschs.) (prov. det. H. Mendel). The same trunk was riddled with the burrows of *Dorcus parallelipipedus* (L.), and also contained larvae of *Prionychus* sp. and *Stenagostus villosus* (Fourcroy), and adult *Biphyllus lunatus* (F.). Beetles found elsewhere in the Park included *Cerylon ferrugineum* Steph., *Mycetophagus atomarius* (F.), *Bitoma crenata* (F.), *Pyrochroa serraticornis* (Scop.), *Melandrya caraboides* (L.), and *Rhagium mordax* (Degeer). Eight of these species are listed in Harding and Rose (1986, *Pasture Woodlands in Lowland Britain.* I.T.E., Huntingdon) as associated with sites where there has been ecological continuity of dead wood habitats. The Park was presumably originally enclosed from the ancient Forest of Dean. K.N.A. ALEXANDER, 22 Cecily Hill, Cirencester, Glos. GL7 2EF.

FURTHER SCOTTISH RECORDS FOR CIS DENTATUS MELLIE (COL.: CISIDAE). — *Cis dentatus* was added to the British list by the late E.W. Aubrook (1970 *Entomologist* **103**: 250) on the basis of a dozen specimens taken by him in Rothiemurchus Forest on 22.ix.66. We know of no other published British record. We took a few examples elsewhere on Speyside some years ago and, finding none since, felt that we should record our captures. Our dates are:—

Loch Garten, v.c. Easterness vi.80 — two examples (1M 1F), caught in plastic funnels set out on the ground in a pine wood to monitor the fall of pine seed.

Loch Vaa, v.c. Nairn 20.viii.80 — two examples (1M 1F), on dead birch with fruiting bodies of *Piptoporus (Polypoyrus) betulinus*. On breaking off two fruiting bodies, the beetles were seen on the wood where the fruiting body had been attached. The site was essentially a pine wood with a few birch trees.

Loch an Eilein, v.c. Easterness 21.viii.80 — (1M), found in a slightly rotten *P. betulinus* on peeling off the pore layer. This too, was in a pine wood with a few birch trees.

Aubrook did not mention the precise habitat in which his specimens occurred, probably because they were not recognised at the time of collection. Lohse (in *Die Kafer Mitteleuropas* vol. 7 ed. Freude, H., Harde, K.W. and Lohse, G.A., Goecke & Evers, Krefeld 1967) states that the species occurs in fungi on conifers but our findings indicate that the beetle also occurs on fungi on other trees.

We thank Mr Stewart Taylor, Warden, R.S.P.B. Loch Garten Reserve, for detecting and passing on to us the examples caught in pine seed traps. I.S. CARTER, 165 Leckhampton Road, Cheltenham, Glos. GL53 0AD and J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

CHOLEVA CISTELOIDES FRÖL. (COL.: CATOPIDAE) IN KENT, SUSSEX AND DEVON — This seems to be our rarest (or at all events our least known) species of the above elegant genus after the recently discovered *C. elongata* Payk., despite its being, apparently, the commonest *Choleva* on the Continent — as pointed out by Kevan, 1946, *Ent. mon. Mag.* **82**: 128, citing Jeannel; the *cisteloides* of older British works being, according to him, *angustata* F. Of Frölich's species there appear to be very few records so far. Kevan (*ibid.*: 122) gave one for Scotland (Berwickshire) and on p.28 two for England based on specimens taken by the late Philip Harwood and determined by Jeannel: Sharpenhoe (Beds.) and Woodhay (N. Hants). I am aware of only one more recent record, by G.E. Woodroffe who took a male at Aston Rowant (Oxon), in 1965 (1966, *ibid.* **102**: 118).

I can now report *C. cisteloides* from three further counties. The Harwood collection included also specimens from Brasted, W. Kent, and an overhaul of material in my own has brought to light a male from Ditchling, E. Sussex, vi.1903 (H. Dinnage) and a female from a mole's

nest at Colyton, S. Devon, 4.ii.40 (G.H. Ashe). The species must certainly occur in many more localities, and may well be found in collections mixed with others of the genus. The sexual and other characters given by Kevan (*loc. cit. supra*) are fully adequate for diagnosis. A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

NEW RECORDS OF LEPIDOPTERA FROM SOUTH WORCESTERSHIRE — I would like belatedly to record the capture of a single rosy marbled moth (*Elaphria venustula* Hb.) at m.v. on 26.vi.1986 in South Worcestershire. This was followed on 3.vii.1986 by a single example of the pyralid *Pempelia formosa* Haw. Both appear to be new County records, well outside their normal range in the U.K. Their capture coincided with the only, and brief, spell of warm weather here in 1986, and I suspect that the former, at least, may be a short distance migrant.

I would also like to record the arrival in the County of *Hadena compta* D. & S. — taken at m.v. on 13.vii.1987. *Lithophane leautieri* Boisd. was first recorded by me in the Worcester area in 1985, and subsequent records show that it has been resident in the Evesham area for some years. Where I now live, some four miles west of Worcester City, *leautieri* is now quite common in the autumn. A.N.B. SIMPSON, The Sycamores, Old Rectory Gardens, Leigh, Worcs.

A PROPOSED NEW R.E.S. HANDBOOK FOR THE TACHNIDAE (DIPTERA) — Work has just started on this new handbook. The collections in the British Museum (Natural History), upon which the work will primarily be based, has an inadequate series of the species given below, and I am seeking the loan of specimens:

Actia exoleta Meig.; *Gymnosoma nitens* Meig.; *Belida angelicae* Meig.; *Carcelia intermedia* Hert.; *Ceranthia lichtwardtiana* Villn.; *Eurythaea scutellaris* R.-D.; *Germaria ruficeps* Fall.; *Gonia foersteri* Meig.; *Hemimacquartia paradoxa* Brauer and Berg.; *Litophasia hyalipennis* Fall.; *Phebellia nigripalpis* R.-D.; *P. stulta* Zett. and *Siphona mesnili* Ander.

Any catalogue of tachinid collections held by individuals or institutions would be useful. The assistance of collectors is also requested to help expand the host records of this group. Specimens reared from known hosts would be greatly appreciated. All parts of the puparium and remains of the host should be included along with the locality, date, host plant/habitat and authority for host identification. The adult fly should be kept alive for a day or two to allow its cuticle to harden. Specimens reared from hosts whose identity is uncertain would also be of value, especially if accompanied by the puparium. Identifications will be provided if requested and the specimens returned by any date required. Any fly which has developed as an internal parasite of

another insect, excepting the leaf-hoppers and the aculeate Hymenoptera, will almost certainly be a tachinid.

The R.E.S. Handbooks are intended to provide a service for amateur and professional entomologists, and so any comments or suggestions from possible future users of this particular volume are welcomed. — ROBERT BELSHAW, Diptera Section, Department of Entomology, British Museum (Natural History), Cromwell Road, London SW7 5BD.

ATHENA EBENINA (MULSANT & REY) (COL.: STAPHYLINIDAE) IN PERTHSHIRE AND SURREY. — I found a female of this species near Loch Tummel, Perthshire on 1.v.81 among a large number of small beetles collected from moss around the stump of a birch tree which had recently been cut down and which was oozing sap. Attempts to capture examples at the same site in the following year by laying down fermenting fruit as a trap were unsuccessful. I found a male among a number of beetles extracted from flood debris collected from the banks of the river Mole at Burford Bridge, Surrey on 13.x.88.

A. ebenina was added to the British list on the basis of a single female specimen taken in Kincardineshire in September 1964 (Last, H. 1968 *Entomologist's mon. Mag.,* **104**: 285). I have been unable to find any other published records of its occurrence in Britain. The species occurs in Denmark, Scandinavia and central Europe but appears generally to be rare throughout its range. Last did not mention the habitat of his specimen but be reported that Dr Strand had found it in the Oslo district in flood refuse, in rotten fungi, at sap and in dove-droppings. Hansen (1954 in *Danmarks Fauna* **59**, p.264) refers to specimens being found in Denmark "in vegetable refuse on a cliff-face with numerous mouse-runs, in company with *Catops* and *Choleva*". Lohse (1974 in *Die Kafer Mitteleuropas* ed. Freude, H., Harde, K.W. and Lohse, G.A. Goeke & Evers, Krefeld) gives its habitat as rotting debris and mouse runs.

A. ebenina is approximately the size and shape of the commoner *A. xanthopus* (Thomson, C.G.), almost black in colour except for the elytra, antennae and labial palps which are very dark brown and the legs and mandibles which are light brown. The last joints of the antennae are relatively short and pointed. In both sexes, the hind edge of the sixth visible tergite is arcuate and crenulate, strongly in the male and rather weakly and only centrally in the female. These tergites are figured by Last. The spermatheca and the aedeagus, which are characteristic, are figured by Palm (1970 in *Svensk Insektfauna* **9** Coleoptera Fam. Staphylinidae pt 6 p.239).

It is perhaps of interest that the collection of specimens in which the female occurred also contained the first example of *Atheta hansseni* Strand to be recorded from Britain (Owen, J.A. 1983 *Entomologist's mon. Mag.,* **119**: 192).

I thank Dr M. Shaw for checking for me the Scottish Insect Records Index held in the Department of Natural History, National Museums of Scotland. — J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

ANASPIS BOHEMICA SCHILSKY (COL.: SCRAPTIIDAE) AT COYLUMBRIDGE. — *Anaspis bohemica* was added to the British list by my good friend Mr A.A. Allen (1975 *Ent. Rec.* **87**: 269) who discovered that this was the true identity of two *Anaspis* specimens given to him by the late G.H. Ashe. They had been beaten by Ashe from broom at Forest Lodge in Abernethy Forest on 22.vi.51 (Ashe, 1952, *Entomologist's mon. Mag.* **88**: 165) and had been labelled *A. hudsoni* Donisthorpe.

Apart from one possibility discussed later, no further captures of *A. bohemica* had been published by 1978 when I started to pay annual visits to Speyside. I kept an eye open for the species on every visit and, at times, sought it specifically, collecting large numbers of *Anaspis* specimens from rowan and other blossoms including bunches of umbels, thistles and other flowers set out in jars in the pine woods near Forest Lodge and around Loch Garten. I was never able to find broom growing around Forest Lodge and a resident who had lived near the Lodge for many years told me that be could not remember seeing it growing there. I set up jars with broom flowers (picked elsewhere) near the Lodge nevertheless and took a number of *Anaspis* from these. In all, I collected, over eight years, about 250 *Anaspis* specimens from Speyside, mainly in the Abernethy area, but all turned out on careful examination to be *frontalis* (Linnaeus) or *rufilabris* (Gyllenhal).

On 21.vi.86, however, my luck changed for, on a visit with my friend Mr R. Lyszkowski to the site of a clear-felled pine wood near Coylumbridge, about 12 km from Forest Lodge, I beat from dead pine branches an *Anaspis* which proved to be a female *bohemica*. It matches a male specimen, one of Ashe's captures kindly given to me by Mr Allen, and Mr Allen has examined my specimen and confirmed my identification. Female *Anaspis* specimens lack the abdominal features which characterise males but the general appearance of the specimen, together with the dark head, the dark first joint of the antennae, the cylindrical shape of antennal joints 6 - 10, the dark labial palps and the equal length of the spines at the apex of the middle tibiae leave no doubt as to its identity.

The possibility of an unpublished capture of the species arises from Mr Allen's observation (1975 *loc. cit.*) that Buck in his key to *Anaspis* (1954 *Hndbk. Identif. Brit. Insects* **5**, Pt. 9) figures for *hudsoni* abdominal appendages matching those of *rufilabris* but the aedeagus of *bohemica*. Now, at the time Buck produced his key (1954), there were apparently two species of *Anaspis* doing duty for *hudsoni* — *rufilabris* and *bohemica*. It seems that Buck, in making his drawings of *hudsoni*

used unwittingly examples of both species — one, which was actually *rufilabris*, for the abdominal appendages and another, which was actually *bohemica*, for the aedeagus. The origin of the latter has never been determined. It could have been one of Ashe's examples, similar to those given to Mr Allen, but if it was a British specimen and not one of Ashe's examples, this would constitute a third British record for the species.

For over a hundred years, the pine woods of Speyside have been visited by entomologists. The reason why *A. bohemica* has not been captured more often remains to be determined but at least now it has been found for certain at two sites. *A. septentrionalis* Champion, which is known only from two specimens taken in July 1876 near Aviemore (Champion, 1891 *Entomologist's mon. Mag.* **27**: 104), has proved more elusive for nothing has been seen of the species in Britain, or elsewhere for that matter, since it was found. Perhaps further discoveries about the habits of *bohemica* will lead also to the rediscovery of *septentrionalis*. Curiously, neither species has been assigned Red Data Book status (*British Red Data Books* **2** Insects ed. D.B. Shirt, Nature Conservancy Council, 1987).

I thank Mr Allen for confirming the identity of this specimen and for helpful discussion of the status of the *A. bohemica* in Britain. Dr M. Shaw kindly checked for me the Scottish Insect Records Index held in the Department of Natural History, National Museums of Scotland.
J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

Insect Outbreaks. Edited by **Pedro Barbosa** and **Jack C. Schultz**. 578 pp., 65 text figs., 54 tables. Boards. Academic Press, 1987. $75.00. ISBN 0 12 078148 4.

This ambitious volume manages to collate a wealth of data and ideas about this important and complex subject. Insect outbreaks are defined succinctly in the excellent introduction by Alan A. Berryman as "... an explosive increase in the abundance of a particular species that occurs over a relatively short period of time. ..."

Multi-author books of this type rarely succeed in achieving such a coherent as well as definitive overview of such a large topic. The division of the material into four sections: Theory and Classification; Community Structure; Biotic and Abiotic Factors and Evolutionary Consequences provides a logical structure to the work, enabling the worker rapidly to find the text of particular interest.

Unfortunately, there is no concluding or summative chapter, although each separate chapter has a brief summary. The tables are well laid out, and easy to understand. This is a unique volume which is indispensible for workers in the field. ELIZABETH ABDULLA.

TO OUR CONTRIBUTORS

ALL MATERIAL FOR THE TEXT of the magazine as well as books for review must be sent to the EDITOR at 4 Steep Close, Orpington, Kent BR6 6DS.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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OF BUTTERFLIES, BIRDS . . . . AND MOSQUITOES
(An entomological foray to the European Arctic — June/July 1987)

By W. J. TENNENT*

In reading the accounts written by previous entomological visitors to the European Arctic, there seem to be two main difficulties with this part of the world. Firstly, the weather which is totally unreliable — and secondly the mosquitoes which are found everywhere in enormous numbers and from which there is no escape. Certainly the weather makes a nonsense of any attempt to plan a visit with any high chance of success in seeing selected species, as the season may vary by as much as several weeks either way and in some seasons certain species fail to appear at all. This, together with the distance and the expense involved, is probably why the area is not visited too often by British collectors.

I had been planning a visit for several years and eventually, after telephoning the weather centres in both Oslo and Stockholm to be told that 1987 was a 'normal' year in the far north and that there had been a fair amount of sunny weather to date, I left the UK on the 20th June, returning on the 20th July. The intention was hopefully to see the end of the early butterflies and the majority of later ones. However, like many before me, I experienced some pretty awful weather and saw relatively few butterflies; a circumstance made bearable by tremendous scenery and the prolific bird life.

In 29 days there were only six when the sun shone all day. These were the 27th June and the 13th to the 17th of July, when I had to begin my journey home. There were a further five days when the sun shone occasionally during part of the day but for the most part, even on some of the sunny days, a cold and sometimes strong wind effectively prevented butterflies from flying. On four more days butterflies were seen in single figures but on 14 days there were none seen at all.

The mosquitoes were a real nuisance, particularly on the low marshy ground, but also on the high ground where they flew even in cold conditions, easily disturbed in large numbers as one walked across the tundra. The poor weather presumably kept the numbers down as they were a lot more numerous on hot days. A strong repellant, for use on clothing as well as on exposed skin, was a necessity.

I had planned to spend most of my time in the area around Abisko, 120 miles north of the Arctic Circle in Swedish Lapland and this was where most of the butterflies were seen. However, I also went to the North Cape and to Kilpisjarvi in Finland close to the border with both Norway and Sweden where apparently (de Worms 1959: p244) many of the Arctic species are to be found. I spent three days walking the slopes of Mount Sanna and Mount Malla but the only butterflies seen were two

* 1 Middlewood Close, Flyingthorpe, Whitby, North Yorkshire.

Erebia pandrose and a single Pierid which was whisked away by the wind before it could be identified. I suspect it may have been *Colias nastes*. It was probably as well that there were not more butterflies as the area is now a National Park and a large notice (which I did not actually see until the last day) proclaimed that anyone found collecting would be relieved of both specimens and equipment!

In the far north there were snow storms and for the first time in 20 years of collecting, it was occasionally necessary to venture forth with net and gloves! Luckily, as far as clothing was concerned, I was prepared for the worst and so was still able to get out and about; the views of mountains and fjords, together with the peace and quiet of such unspoiled surroundings, made it all worthwhile. The 'midnight sun' took some getting used to. I had expected a kind of heavy dusk throughout the night but in fact there was full daylight 24 hours each day.

Abisko is said to be one of the driest places in Sweden, with an average annual rainfall of about 300mm (11.8 inches); it is particularly rich in flora and fauna although much of the area is also a National Park where collecting is not permitted. It lies at the western end of the Tornetrask, a lake some 60 km long and is overshadowed by Mount Njulla, 1169 metres above sea level. The area, like most of northern Scandinavia, is very marshy and stout walking wellingtons are a 'must'. Birch forest is widespread and is quite thick in part, giving way to tundra at about 500 metres. Many of the butterflies were to be found in clearings in the forest when conditions were favourable.

Although intended to be an entomological account, this would not be complete without a mention of other wildlife, in particular the birds. They are of great interest to the UK visitor as many winter visitors or scarce migrants to our own shores were breeding quite commonly. I stumbled on a nest of the red-spotted bluethroat (poor bird to be saddled with such a name — rather like calling the red admiral a red striped white spotted black. The Swedes call the bird the mountain nightingale — a much more appropriate name) on my first day at Abisko and subsequently found two more nests with up to six olive green mottled eggs. Small ground nesting birds were common and I came across a large number of nests, some of which had as many as eight eggs; presumably the enormous numbers of mosquitoes helped to support such large families. Birds seen commonly included brambling, wheatear, arctic redpoll, willow tit, yellow wagtail, fieldfare, redwing and of the larger birds raven, ptarmigan, arctic tern, long-tailed skua, divers, mergansers, merlin and rough-legged buzzards were regularly seen. On the tundra golden plover were always present, escorting the walker through their territory with a distinctive, piercing whistle and watching carefully from a safe distance until one reached the edge of their property where one would be handed over to the pair who owned the adjacent territory. On one memorable occasion I almost stepped on

a small plover, revealing a nest with three incredibly well camouflaged eggs. I built a small cairn nearby to guide me back to the nest in weather more suitable for photography but still had some difficulty in finding it again when the time came. On another occasion I disturbed a dotterel with young and also found a young rough-legged buzzard in a large eyrie with what must surely have been one of the best views from home of any bird.

With regard to the larger mammals, reindeer are common (and a menace on the roads further south in Sweden), as are elk although I saw none of the latter. There are small numbers of brown bear at the eastern end of the Tornetrask and the Abisko area also supports wolverine, lynx and, until recently, wolves. The only one of these last four I saw was a lynx drinking from a mountain stream near the tree line. The animal is said to be rare in Sweden and when I mentioned it at the Tourist Station, half expecting not to be believed, I was told that there had been a female and two cubs seen regularly during the last few weeks.

Tourism has overtaken, but not spoiled, Abisko since Sheldon visited more than 65 years ago (Sheldon 1911). There is a busy Tourist Station which caters for the numbers of tourists and serious hikers who arrive daily by train from Narvik in the west and Kiruna in the east. There are well planned walks in the birch forest and along the side of the Abiskojakka, a mountain torrent which has worn a deep canyon on it's way to the estuary in the Tornetrask. A scenic chairlift now goes to a cafe near the top of Mount Njulla and there are walks to Bjorkliden and Stordtdalen, several kilometres away to the west and east respectively. Altogether, it is a most pleasant spot to visit, provided one can come to terms with the weather, the mosquitoes and the inescapable fact that, by UK standards, it is *very* expensive.

An annotated list of the butterflies seen at Abisko:

Artogeia napi adalwinda Fruhst. Common from the lakeside to 920 metres. The female has a weak, fluttering flight and has been compared to the Alpine ssp *bryoniae* Hübn.; females of the northern form seem on the whole to be rather smaller.

Colias nastes werdandi Zetterstedt. One of the few successes of the visit. It was first found in small numbers in poor condition (indicating an earlier emergence in good weather) by the edge of the Tornetrask and in the marshy clearings between the Abiskojakka and the Lapp Porten on the 26th June. The following day (the first real sunny day), it was found in good condition on the eastern slopes of Mount Njulla; it was later seen higher than any other butterfly, flying in small numbers at 1100 metres near the mountain summit. By the time I left, on the 17th July, some females were still in good condition at altitude and both sexes were very tattered at low levels. It is a very variable species. From his series of 28 males and 27 females Sheldon (1911) described five new forms which have subsequently, and quite rightly, been ignored. Nevertheless, males

vary in colour from lemon yellow to almost white and there is considerable variation in the extent of black markings. A form very like a small *C. palaeno* with a regular and unmarked marginal border, was not uncommon. The best time to take this species was early in the morning when, although its flight was very fast, individuals rest and feed frequently. Later in the day it did not seem so keen to stop — and there is a limit to the number of 50 metre dashes that someone who is not a natural athlete can make! I was disappointed not to see *Colias hecla sulitelma* Aurivillius which is said to be found on the same biotope, but the poor weather presumably caused it to be much later than usual.

Colias palaeno lapponica Stdgr. I first saw a single male of this species half way up the eastern slope of Mount Njulla on the 7th July. It was next seen on the eastern side of the Abiskojakka on the 15th July and the numbers increased steadily in this location during the next two days.

Aglais urticae polaris Stgr. A single damaged but fresh looking example was seen at the edge of a car park on the way to Saltdalen on the 28th June. It looked no different to the nominate *urticae*.

Boloria napaea Hoffmannsegg. At 920 metres on Mount Njulla I took a single *Boloria* which is clearly not *aquilonaris* and is presumably therefore *napaea*. It has caused me some confusion as it is larger than *aquilonaris* and is quite well marked. Henrikson and Kreutzer (1982) remark that ssp *lapponica* Stdgr. flies in northern Scandinavia although Warren (1951) has said that *lapponica* does not exist as a subspecies of either *napaea* or *aquilonaris*.

Boloria aquilonaris scandinavica Bjorn Peterson. Several specimens of this butterfly were found on marshy ground between 400 and 500 metres. The first was on the 5th July and the remainder from the 15th onwards, flying with the next species.

Proclossiana eunomia ossiana Herbst. Found fresh in bogs at low levels on the 26th and 27th June; quite common from the 16th July but worn by then.

Clossiana selene D. & S. A single male, not particularly dark as in f. *hela* Stdgr., was found by the Abiskojakka on the 17th July.

Clossiana euphrosyne L. Only five specimens found on marshy ground at 440 metres on the 15th, 16th and 17th July. They vary in the extent of dark suffusion, only two may be referable to f. *fingal* Herbst.

Clossiana thore borealis Stdgr. One specimen was seen in one of the forest clearings on the eastern side of the Abiskojakka on the 15th July. There were none in the same spot the following day but on the morning of the 17th there was a mass emergence in the birch forest and it was suddenly common. Not only was this the only species to be found actually in the forest where it was feeding from flowers and settling often on the bare leaves, but it was *not* found in the clearings. This seems to be about the 'usual' date of emergence.

Clossiana freija Thunberg. This was the first 'Arctic' butterfly to be found, seen in small numbers in the lower bogs on the 26th June when it was in fresh condition but reluctant to fly in the dull weather unless disturbed. It was found from then on whenever the sun came out but was soon worn, being almost over when I left on the 17th July. Very few were seen higher on the mountain and it seemed almost confined to the low marshes, including at Bjorkliden, Saltdalen and near Kiruna. The colour and contrast of the underside markings vary considerably.

Clossiana frigga Thunberg. Only one individual of this much larger fritillary was seen near the Abiskojakka on the 26th June. Unfortunately, although fresh, it was badly damaged.

Hypodryas iduna Dalman. This is a most attractive species. I found it very locally in marshy areas on the eastern side of the Abisko jakka and very occasionally up to 940 metres on Njulla although it was by no means widespread. It is interesting to see that Henriksen and Kreutzer (1982; p 98) note that the insect has a very short lifespan with only a few days between the emergence of the first male and the disappearance of the last female. I came across it first on the 26th June in fresh condition and again in the same locality after a period of bad weather three weeks later when it was also in fresh condition. It obviously has the ability to delay emergence during unfavourable conditions. The males have a very fast whirring flight and like to bask on low bushes with wings outspread in sunny weather; in cloudy weather however they would often dive into the grass and crawl down to the roots from where it was almost impossible to extract them. No doubt this has a bearing on the fact that individuals become worn very quickly. I saw only five females and they seemed reluctant to fly at all. The males exhibit much variation and I found several with greatly reduced white markings on the hind wings.

Oenis norna Thunberg. A single specimen, well past its best, was found on my last morning (17th July) about three kilometres along the bank of the Abiskojakka. Other have found it quite commonly here so I suspect I was not looking in the right place.

Erebia pandrose Borkhausen. This was the most ubiquitous species seen and also the most hardy, often seen flying over the snow and willing to be flushed up in overcast weather. It became increasingly common during my stay. I was very disappointed not to see any of the other Arctic *Erebia*.

Lycaeides idas lapponicus Gerhard. Two males of this species were seen near the Tourist Station on the 15th July and a third male alongside the Abiskojakka two days later.

Vacciniina optilete Knoch. A single male was disturbed in poor weather in a marshy clearing in the birch forest on the 26th June. During the sunny weather towards the end of my stay both sexes became common in the clearings.

Pyrgus andromedae Wallengren. One specimen was found on moist ground on 27th June and a further two on the 14th July.

Pyrgus centaureae Rambur. A single specimen was found on Mount Njulla on the 14th of July.

References.

de Worms, C.G.M. 1951. A collecting trip to Abisko, Swedish Lapland in June 1950. *Entomologist* **84**:121-127.

de Worms, C.G.M. 1959. Lepidoptera in Finland, June 1958. *Entomologist* **92**: 242-246.

Haig Thomas, P. 1938. Arctic butterflies, and especially those of Maalselven, Lapland, Lat 69° N. *Entomologist* **71**: 1-5.

Haig Thomas, P. 1939. The butterflies of Lapland 1938. *Entomologist* **72**: 129-132.

Henriksen, H.J. and Kreutzer, I.B. 1982. *The Butterflies of Scandinavia in Nature.*

Higgins, L.G. and Hargreaves, B. 1983. *The Butterflies of Britain and Europe.*

Higgins, L.G. and Riley, N.D. 1984. *A Field Guide to the Butterflies of Britain and Europe.*

Johnson, Major General Sir George 1960. Collecting in Lapland, July 1960. *Entomologist's Rec.J.Var.* **72**: 203-206.

Johnson, Major General Sir George 1964. Abisko revisited. *Entomologist's Rec. J.Var.* **76**: 259-260.

Sheldon, W.G. 1911. Lepidoptera of the Swedish provinces of Jemtland and Lapland. *Entomologist* **44**: 357-362. 1912. *Ibid.* **45**: 23-27.

Warren, B.C.S. 1951. On a *Boloria* recorded from Abisko (Lep.: Nymphalidae). *Entomologist* **84**: 169-171.

ECTROPIS BISTORTATA GOEZE (LEP.: GEOMETRIDAE) THIRD BROOD— Two males were attracted to my garden m.v. light 2.x.1987; the second generation here lasted about five weeks, specimens being seen from 14.vii. until 22.viii. The few supposed third brood individuals I have observed here, and I have not encountered them elsewhere, resemble those of the smaller and less well marked second generation, although their markings are even more obscure.

That these late individuals are representatives of a partial third brood is evidenced, apart from possible climatic factors, by the distinct gap between their emergence and that of the second brood, their size and appearance and the readiness with which a third generation is obtained in captivity, yet the viability of an extra brood is surely doubtful as the insect hibernates in the pupal state, and the lower temperatures of autumn would seem to preclude the larvae developing sufficiently rapidly to attain maturity before leaf-fall or the inception of winter.

Records of these late emergences certainly need to be published in order to ascertain their frequency and distribution; at present they appear sporadic, and have been so for over fifty yeares, but a subtle change of climate might alter considerably this tendency to produce a few specimens of a third generation in part of the insect's range. B.K. WEST, 36 Briars Road, Dartford, Kent.

A FOURTH SPECIES OF *ISCHNOMERA* STEPH. (COL.: OEDEMERIDAE) IN BRITAIN

By A. A. ALLEN*

In 1980 P. Skidmore and F. A. Hunter brought forward a third British species of this genus, *I. cinerascens* Pand., a very interesting addition to our fauna. I am herewith able to add yet another, so that we now possess all of the four species known in central Europe — the latest having been recognized only in the last eight years.

My attention was first drawn to the matter on seeing the note by Dr. G. A. Lohse (1982) pointing out that the familiar *Ischnomera (Asclera) caerulea*(1) L. of European authors, also known on the Continent as *I. (A.) cyanea* F., was actually a mixture of two species, and figuring the clearly dissimilar male genitalia; females being, apparently, indistinguishable. The original discovery had been made by G. Dahlgren three years earlier. Thinking that our British *I. 'caerulea'* might possibly include both species, I checked the material in my collection, which revealed (as expected) only the commoner of the two in most parts of Europe. Since then, however, four males among some unmounted beetles from Windsor Great Park (19.v.36, 8.v.54) proved on dissection to belong to the other species — Lohse's figures of the aedeagi sufficing for instant recognition. Later, two further males from the same productive locality were detected in my friend Professor J. A. Owen's collection, taken within the last decade or so. All the above were beaten from hawthorn blossom in various parts of the Park. Other males collected in the area (Park and Forest) by both of us at different times belong to the commoner species, as do those from elsewhere.

The nomenclature of this pair of species has been involved in some little confusion. Linnaeus described his *Cantharis caerulea* in 1758, Fabricius his *Necydalis cyanea* in 1792, the two being up to lately treated as synonymous; both names, however, are employed in Continental literature, the latter of them especially in the past half-century (for no very clear reason). In 1976 Dahlgren described *Asclera graeca* as a new species from Greece, contrasting it mainly on aedeagal characters with '*cyanea*' (*caerulea*) and with *cinerascens*. Order finally emerged when in 1979 the same author published his important discovery that the 'species' known as either *caerulea* L. or *cyanea* F. in fact comprised two, differing very obviously in their aedeagi, the more generally common of them being identical with *graeca* Dlgr. Whilst it is impossible to be sure which species the early authors had before them, Dahlgren has very properly, on the basis of probabilities, synonymized

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(1). Continental authors favour the spelling *coerulea*, but Linnaeus appears to have written *caerulea* (cf. Pope, 1977: 69).

his *graeca* with *cyanea*; and assigned the name *caerulea* to the other, which, being the common Swedish species, Linnaeus may be assumed to have had before him.

The distribution of the two forms across south-east and middle Europe, as indicated by the ample material studied by Dahlgren (1979: 65-6), is broadly similar but shows certain striking differences in the north-western part of their range. Thus, the true *I. caerulea* (the rarer species in Germany) does not appear to occur at all in Denmark, where *I. cyanea* is widespread; yet in Sweden, *caerulea* is dominant, *cyanea* being known (at least up to 1979) from one locality only. In Britain, the indications hitherto are that much the same obtains as in Germany. Mr. Peter Skidmore has been unable to find the true *caerulea* among numerous examples from midland and northern localities that he has dissected; and indeed this species may well prove to be an old-forest relict with us, confined to Windsor Forest (like certain other such species) and perhaps to one or two comparable areas. At present, however, this is mere conjecture. Lohse (p.124) notes the significant point that whereas *I. cyanea* develops in almost any species of rotting wood, he has so far bred *caerulea* exclusively from oak.

Unfortunately, no definite character can yet be given for separating the two species externally. Nevertheless, the six British males of *I. caerulea* that I have been able to examine do seem to show a small difference, worth noting in the hope that further experience may confirm its usefulness. Should this be the case, it may prove peculiar to the British race of *caerulea*, for otherwise it would surely have been noticed by Dahlgren and Lohse. It can be expressed as follows:—

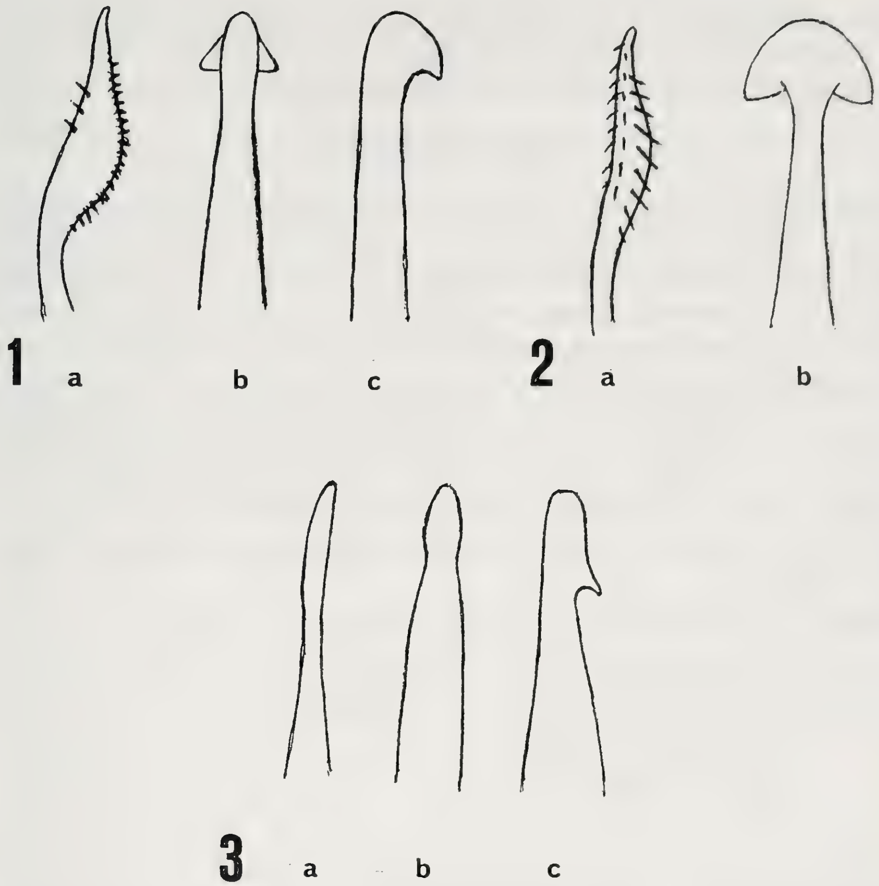
The two fine, shining, raised longitudinal lines on each elytron between suture and shoulder

(1) equally distinct throughout, not noticeably weaker in the apical half (colour of elytra usually a little brighter) .... *cyanea*.

(2) becoming indistinct or effaced behind, hardly traceable in the apical half or more (colour of elytra usually a little duller) .... *caerulea*.

The difference is best appreciated at low magnifications, e.g. a $\times 8$ or $\times 10$ hand lens.

With so slight a character, attested as yet in so few specimens, one must be prepared to find individuals where the condition is intermediate or indeterminate. Using it with due caution, however, I have tentatively separated females of the two species among Prof. Owen's material from Windsor. Such are a female *caerulea* taken 28.v.87, probably with a male of the same date; and a female *cyanea* from crab-apple, vi.76. More questionable is a female, apparently *caerulea* to judge by the elytral character, found by Prof. Owen at Nonsuch Park, Ewell (near Epsom, Surrey) in elm, iii.76. This record can only be regarded as provisional, pending the occurrence of a male at the same place. The locality has a few oaks, and at the time of capture plenty of elm, now much reduced.



Figs. 1-3. Aedeagi of *Ischnomera* spp. (apices only), largely after Dahlgren and Lohse; slightly schematic. a, paramere, lateral; b, median lobe, dorsal; c, ditto, lateral. 1, *I. caerulea*; 2, *I. cinerascens*; 3, *I. cyanea*. (The paired sub-apical teeth of the median lobe — of which only one appears in the strictly lateral views — may in *cyanea* (3b) sometimes be visible on each side in dorsal view, as pointed out by Dahlgren. For other figures of *cinerascens*, etc., see Skidmore and Hunter.)

Though these two species are manifestly very closely related, it is a remarkable fact that in aedeagal structure they diverge so as to present strong affinities each towards one of the two remaining mid-European species of the genus. Thus, the aedeagus of *caerulea* resembles that of *cinerascens* except in being much shorter, both having swollen and spinose parameres; though beyond that there are marked differences. The *cyanea* aedeagus on the other hand, in its simple parameres(2) and the form of its apex, is like that of *I. sanguinicollis* F., but again is much shorter (cf. Skidmore and Hunter, figs. 2, 3). (It must not be overlooked

(2) The parameres in these species being united by a common stem, it would be more strictly correct to speak of a single forked paramere (such as is found in various *Philonthus* sp., for example).

shorter (cf. Skidmore and Hunter, figs. 2, 3). (It must not be overlooked that the *cyanea* of Dahlgren's 1976 paper is really *caerulea*, whilst the *caerulea* of Skidmore and Hunter's paper is *cyanea* as now understood.)

In one detail I cannot quite agree with the latter writers, when they state as a key-character for *cyanea* (p.129) that the aedeagus is ". . . . strongly curved". The figure they give suggests that, at the very least, the word 'strongly' should be omitted. Indeed, in the several specimens that I have examined (all southern) the aedeagus is straight, or practically so. Perhaps therefore this particular feature may vary in different populations, and should be ignored for diagnostic purposes.

Collectors should keep a close watch for *I. caerulea* and extract the aedeagus of all the wholly green or blue *Ischnomera* males they find, especially in areas of old forest or parkland. It may be said that, very generally, males are smaller and more parallel-sided than females.

By way of summary, it may be useful to recapitulate the synonymy of the two species:—

I. caerulea (Linnaeus 1758), auct. Europ. partim
= *cyanea* sensu Dahlgren 1976, nec 1979

I. cyanea (Fabricius 1792), auct. Europ. partim
= *caerulea* auct. Brit.
= *graeca* Dahlgren 1976.

Acknowledgements

My thanks are due to the following gentlemen for information, literature, or help in other ways:— Herr Gunnar Dahlgren, Dr G.A. Lohse, Prof. J.A. Owen; Messrs P.M. Hammond, C. Johnson, and P. Skidmore.

References

Dahlgren, G., 1976. Eine neue *Asclera*-Art aus Griechenland (Col., Oedemeridae). *Ent. Tidskr.* **97**: 21-2.

Dahlgren, G., 1979. *Ischnomera (Asclera) coerulea (cyanea)* auct., eine Doppelart (Col., Oedemeridae). *Mitt. Ent. Ges. Basel* **29**(2): 64-6.

Lohse, G.A., 1982. 13. Nachtrag zum Verzeichnis der mitteleuropäischen Käfer. *Ent. Blätt.* **78**(2-3): 123-4.

Pope, R.D., in Kloet & Hincks, 1977. *A check list of British Insects,* 2 ed., **3**. R. Ent. Soc. London.

Skidmore, P., and Hunter, F.A., 1980. *Ischnomera cinerascens* Pand. (Col., Oedemeridae) new to Britain. *Ent. mon. Mag.* **116**: 129-132.

[Since writing the above, I have received from Mr J. Cooter a male *I. caerulea,* one of a few taken by him in May at Moccas Park NNR, Herefords., from hawthorn flowers, with *I. cyanea*. All four of our species are now known from this prolific old forest site.—A.A.A.]

APLOTA PALPELLA (HAWORTH) (LEP.:OECOPHORIDAE): FURTHER NOTES ON THE BIOLOGY AND HABITAT REQUIREMENTS

By P. H. STERLING*

Following the discovery of a single dead specimen of this species in Savernake Forest in Wiltshire in August 1986 (Sterling, 1987) a search was made for the larvae at the end of May 1987 on moss on the same and nearby oak trees. The moss growing on the trees was predominantly *Hypnum cupressiforme* (Hedw.). Outward signs of larval activity were hard to find, but small areas of fine sandy grey frass spun with silk were discovered on the surface of the moss and bark. The frass grains were much finer than those produced by larvae of the Scopariinae, and were not green. Scraping the fine frass away revealed that it was part of silk tubing, and that tubes formed a branching network on the surface of the bark, under the moss and deep into crevises in the bark. When tubes were removed, much of the dense white silk attached to the bark remained in place, revealing the extent of the network. This white silk was not more than 3mm in diameter. Larvae, fitting Wood's description (in brief — black head, prothoracic and anal plates; body colour dull green, but with purplish sub-dorsal lines), were discovered in the tubes.

Following a casual inspection of similarly moss-clad oak trees in Blenheim Park, Oxfordshire, in mid-June, identical outward signs and larvae were found. By the end of June larvae had been discovered on virtually all of the great oak trunks at one end of the park. In addition, yellow-brown pupae were discovered in the tubes, particularly those in deep fissures in the bark.

Adults of *A. palpella* emerged during July from both localities. They rested on the surface of the moss with their wings held out, not appressed to the moss as might be expected, and flitted quickly when disturbed. *A. palpella* has not previously been recorded from Oxfordshire (V.C. 23).

Some further comments can be noted about the habitat this insect was occupying. All trees on which larvae were found were large (many of the oaks in Blenheim Park were several centuries old) and had remained undisturbed for long enough to allow a good growth of moss, mainly *H. cupressiforme*, but also some *Homalothecium sericeum* (Hedw.) up the trunk of the trees to a height of at least two metres, and on the large boughs further up the tree. The moss sometimes formed a complete mat from the base of the tree to the lowest bough. However, larvae were generally found amongst the dry thin moss layer which sparsely covered the trunks, rather than the thicker layer which grew in moister conditions. Thus, in many cases, larvae were found on exposed trunks rather than those deep in shade. There was no evidence for aggregative behaviour of the larvae, as had been reported by Wood (1891). At

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Savernake, where larvae were found on two trees only, the restricted distribution could have resulted from lack of suitable habitat on other trees or poor dispersal ability of adults, rather than a particular colonial habit. At Blenheim, larvae were widely distributed between trees.

These detailed notes allowed Mr R.J. Heckford, having already ear-marked some likely trees, to discover the larvae in Devon (see this issue of *Ent. Rec.*), and it is likely that the species will be found in other places. Clearly, large trees which have good growth of moss in the right condition are targets for search, but following reports of the discovery of the species on moss on rocks in Scandinavia, and Wood's original record of the species breeding on a wall, perhaps all that is required is any substrate which allows the moss to grow in a thin mat undisturbed for many years, possibly for centuries.

I am grateful to Mr M.F.V. Corley, Dr J.R. Langmaid and Col D.H. Sterling for their comments, and to the estate management at Blenheim Park for allowing access to search for the larvae.

References

Sterling, P.H. (1987): *Aplota palpella* (Haworth) (Lep: Oecophoridae) rediscovered in Britain. *Entomologist's Rec.J. Var.*, **99:** 275-276.
Wood, J.H. (1981): *Entomologist's mon. Mag.*, **27**: 271-273.

DISTRIBUTION OF PROTODELTOTE PYGARGA HUFN. [LITHACODIA FASCIANA L.] (LEP.: NOCTUIDAE) IN GREAT BRITAIN— In the note relating to the discovery of this species in Co. Mayo (*Ent. Rec.* **100**: 72) it is stated that 'in mainland Britain it is of southern distribution'. This is not quite accurate as the range extends in the western half of Britain northwards to North Wales and in the eastern half northwards through Lincolnshire, where it is locally well established, to Yorkshire where a colony exists on Skipwith Common. All these localities are depicted on the distribution map in Heath, J. and Emmet, A.M., 1983. *Moths and Butterflies of Great Britain and Ireland* **10**: 307. It is interesting to note that both the Yorkshire and Co. Mayo sites lie between latitudes 53° and 54°. BERNARD SKINNER, 5 Rawlins Close, South Croydon, Surrey.

HADENA COMPTA D. & S. (LEP.: NOCTUIDAE) IN HAMPSHIRE— The note recording a specimen of this species at Martin Down (*Ent. Rec.* **100**: 93) indirectly infers it as possibly new to the County, whereas the first published record occurred at Oakley, North Hampshire (V.C. 12) on 23.vi.1983 (*Proc. Trans. Br. ent. nat. Hist. Soc.* **18**:8). Since then several other adults and one pupa have been noted in the same locality (A.H. Dobson pers. comm.). The first published record for South Hampshire (VC 11) was taken at Winchester on 23.vii.1984 (*Ibid.* **18**: 11). BERNARD SKINNER, 5 Rawlins Close, South Croydon, Surrey.

A NEW TWIST TO DEFLECTIVE EYE SPOTS IN BUTTERFLIES

By Torben B. Larsen*

I have for long been interested in the underside markings of butterflies as deflective markings, intended to make predators attack a non-vulnerable part of the resting butterfly. The most obvious example of this is that shown by members of the Lycaenidae which have developed quite remarkably life-like false heads through the patterns and tails of their hindwings (Larsen, 1982a). We are indebted to the elegant experiments of Robbins (1980) for proof that false heads really do work in deflecting predator attack. My book on Arabian butterflies shows how the false head of one species of *Spindasis* works viewed both from above and from the side (Larsen, 1984).

The really well-developed false heads in certain members of the family Lycaenidae are the apex of deflective markings. The marginal eye-spots so common in the Nymphalid groups of subfamilies fulfil the same function. An attack by a predator is directed towards the margin of the wing, not towards the vulnerable head or body (Brakefield and Larsen, 1984). I once found a large population of *Hipparchia parisatis* Kollar in the Musandam Peninsula of Oman where some 15 percent of all specimens showed the symmetrical damage to the edge of the wings caused by large vertebrate predators such as birds or lizards (Larsen, 1982b). Such marginal eye-spots are particularly common in the Nymphalinae, Satyrinae, Morphinae, Amathusiinae and Brassolinae.

Deflective markings of this nature are obviously very different from camouflage markings, though some species are seasonally polyphenic, having a camouflaged dry season form with only traces of the eye-spots while the wet season form retains the eye-spots. This is probably related to different defensive needs during two seasons with very different climatic conditions, presumably influencing both the predator spectrum and the behaviour of the butterflies themselves (Brakefield and Larsen, 1984).

Eye-spots on the inner surfaces of wings more generally seem to have a startling function, the experiments by Blest (1957) clearly showing their effectiveness in this respect. Members of the Satyrinae often display their eye-spots with a characteristic jerking movement; the Sphingid moth *Smerinthus ocellata* reveals its large hindwing spots by jerking upwards the forewings.

It is, therefore, always somewhat disconcerting to see eye-spots which do not appear to have either a startling or a deflective function. This is the case with a number of Latin American members of the Riodinidae, especially in the genera *Mesopthalma, Semomesia, Mesosemia, Diopthalma,* and their relatives. These species have a well-developed spot at the end-cell of the forewing, apparently constructed from the

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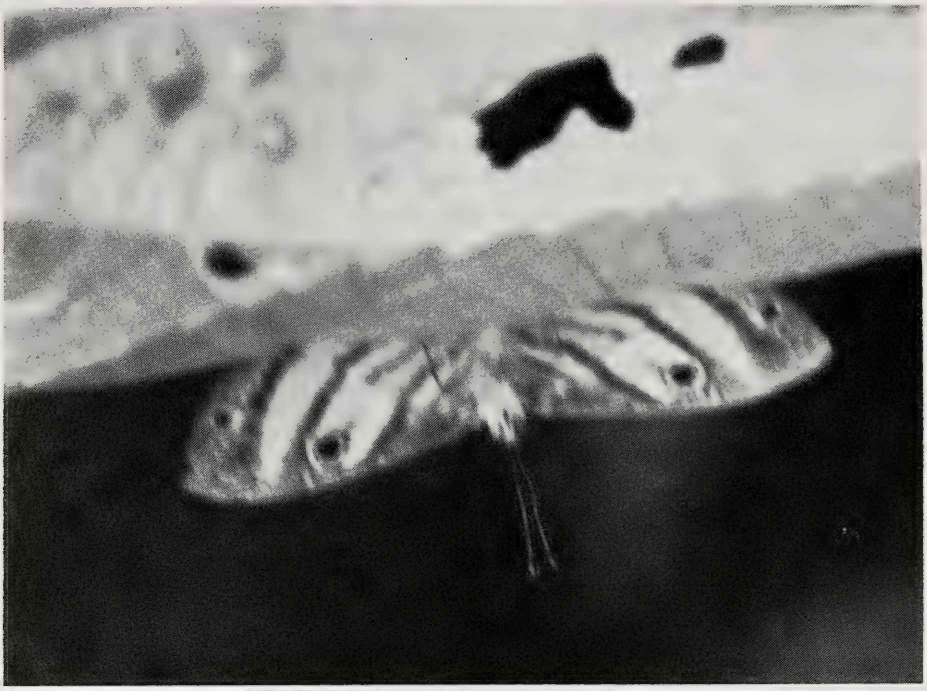

Fig. 1. A specimen of *Diopthalma lagora* resting on the underside of a leaf (Tinalandia, Ecuador). The end cell spots are very prominent.

same type of concentric circles as in the Nymphaline and Satyrine eye-spots (Nijhout, 1980). In set specimens it is difficult to imagine how they could usefully act as deflective markings.

During a recent visit to Ecuador I was able to observe one such species in nature (*Diopthalma lagora* Herrich-Schäffer). The eye-spots in fact do seem to be deflective markings. They work only because of the special resting posture of the butterfly. It invariably settles on the underside of leaves, usually an inch or so from the edge. I observed more than 100 such landings. The wings are held flat, not folded over the back as in most butterflies, and the front legs are stretched out so that the butterfly juts out from under the leaf at a 30° angle, with the hindwings in contact with the leaf surface (see figure 1). Thus the eye-spots are clearly visible when the butterfly is at rest, which would not be the case if the butterfly adopted a normal resting posture. The deflective markings would be most effective for any predator that looked from above over the edge of the leaf.

The fact that the eye-spots in the Riodinidae are placed differently and related to resting postures implies that it is a case of parallel evolution of similar passive defence mechanisms, indicating that deflective markings have a considerable survival value.

Acknowledgements

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References

Blest, A.D. (1957). The functions of eye-spot patterns in the Lepidoptera. *Behaviour,* **11**: 209-256.

Brakefield, P.M. and Larsen T.B. (1984). The evolutionary significance of dry and wet season forms in some tropical butterflies. *Biol. J. Linn. Soc.,* **22**: 1-12.

Larsen, T.B. (1982a). False head butterflies; the case of Oxylides faunas Drury (Lycaenidae). *J. Lepid. Soc.,* **36:** 238-239.

Larsen, T.B. (1982b). Heavy predation by birds or lizards of *Hipparchia parisatis* Kollar (Lepidoptera: Satyrinae) in Oman. *Entomologists' Gaz.,* **33**: 5-7.

Larsen, T.B. (1984). *The butterflies of Saudi Arabia and its neighbours.* Stacey Intl., London.

Robbins, R.K. (1980). The Lycaenid false head hypothesis; Historical review and quantitative analysis. *J. Lepid. Soc.,* **34**: 194-208.

APLOTA PALPELLA (HAWORTH) (LEP.: OECOPHORIDAE) IN DEVON— On 1st July 1987 I found four larvae of *Aplota palpella* amongst *Hypnum cupressiforme* var. *resupinatum* on two beech trees at Ashclyst Forest, Devon (V.C. 3). Nothing emerged from one, one produced a parasite which so far can only be determined as belonging to the genus *Chelonus* and the other two produced moths on 25th and 29th July. This is the first time that the species has been recorded from Devon.

The larvae fed in strong silken tubes hidden amongst the moss. Their presence was revealed by fine sawdust like frass on the surface of the moss. Although this grew over much of the trunk, often luxuriantly, the larvae occurred only where the moss was sparse and about five to six feet from the ground. Three of the larvae fed in an area of scar tissue.

The moss grew on almost all of the neighbouring trees, most of which were oak, but I could not find larvae on these. As it was more difficult searching for tubes on their rough furrowed bark I may have overlooked them. However the two trees with larvae were at the edge of the forest and so received more light (they were not in direct sunlight) and this might be significant.

I am very grateful to Mr P.H. Sterling for telling me how he had discovered larvae at Savernake Forest earlier in 1987, as without that information my search may not have been successful. My thanks are also due to Mrs J. Paton for confirming my tentative identification of the moss, to Dr M.R. Shaw for determining the genus of the parasite and to The National Trust and Forestry Commission (respectively the owners and lessees) for permission to record at Ashclyst Forest. R.J. HECKFORD, 67 Newnham Road, Plympton, Plymouth.

NEW HOST RECORDS FOR FUNGUS-BREEDING PHORIDAE (DIPTERA)

By R.H.L. DISNEY* AND R.E. EVANS**

The following records of scuttle flies from fungi were (except where indicated) obtained in rearing experiments by R.E.E. and the flies identified by R.H.L.D. The fungus names follow Phillips (1981).

Conicera similis (Haliday)
Four reared from *Tuber aestivum* Vitt. found by K. Redshaw in Leeds (see Preece and Redshaw, 1978). It has previously been reared from *Pluteus cervinus* (Schaeff. ex. Fr.) Kummer (Schmitz, 1948, Eisfelder, 1956) and obtained in emergence traps set over soil (Disney and Gunn, 1980).

Megaselia berndseni (Schmitz)
Twelve from *Boletus versicolor* Rostk. collected at Sparham Pools, Norfolk (Grid ref. 63/0718) on 14 August 1982. Under the synonym of *M. pygmaeoides* (Lundbeck) (see Disney, 1985), this species has been reported from 18 other species of fungi (Eisfelder, 1956, Buxton, 1961, Disney and Evans, 1979).

Megaselia flava (Fallén)
Twelve from *Gymnopilus hybridus* (Fr. ex Fr.) Sing. collected on 23 November 1984 at Poet's Breck, Norfolk (Grid ref. 63/1313). This species has previously been reared from seven other species of fungi (Schmitz, 1948, Eisfelder, 1956, Buxton, 1961, Disney and Evans, 1982).

Megaselia flavicans Schmitz
Two from *Lyophyllum fumatofoetens* (Secr.) Schaeff. collected at Hockering Wood, Norfolk (Grid ref. 63/0715) on 10 June 1984. It has been reared from 17 other species of fungi (Schmitz, 1948, Eisfelder, 1956, Disney and Evans, 1978, 1982).

Megaselia frameata Schmitz
Three from *Coniophora puteana* (Schum.) Karst. collected at Honingham Fen, Norfolk (Grid ref. 63/0911) on 3 September 1986. It has been reared from six other species of fungi (Buxton, 1961, Colyer, 1954 and unpublished, Disney and Evans, 1982).

Megaselia hirtiventris (Wood)
Three from *Agaricus augustus* Fr. collected at Narford Hall, Norfolk (Grid ref. 63/7613) on 18 September 1983. 74 from *Sclereoderma citrina* Pers. collected at the same locality on the same date. One from *Agaricus silvaticus* Schiff. and Secr. collected from Warren Wood, Norfolk

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**Chanterelle, Church Road, Welborne, East Dereham, Norfolk NR20 3LH.

(Grid ref. 63/0911) on 16 May 1981. It has previously been recorded from *Agaricus campestris* L. ex Fr. (Eisfelder, 1956) and *Pholiota* sp. (Chandler, 1978).

Megaselia lutescens (Wood)
Twelve from a rotting, galled *Panaeolus subbalteatus* (Berk. and Br.) Sacc. collected at How Hill, Norfolk (Grid ref. 63/3719) on 31 August 1986. Buhr (1965) recorded "?*Megaselia lutescens*" from a galled *Panaeolus* sp. Whether this species causes the galls or, more likely, it parasitises the gall-former (as this species has the sort of ovipositor normally associated with parasitoid habits) is not known.

In addition it has been reared from *Russula foetens* (Pers. ex Fr.) Fr. (Eisfelder, 1956).

Megaselia scutellaris (Wood)
One from *Amanita citrina* (Schaeff.) S.F. Gray collected from Ringland Hills (Grid ref. 63/1313) 25 September 1980. 20 from *Tricholomopsis platyphylla* (Pers. ex Fr.) Sing. collected from Holbrook Gardens, Suffolk (Grid ref. 62/1737) on 16 October 1983. Nine from *Mycena galericulata* (Scop. ex Fr.) S.F. Gray collected at same locality on same day. It has been reared from seven other species of fungi (Eisfelder, 1956, Buxton, 1961).

Megaselia sylvatica (Wood)
M. latior Schmitz has been misidentified as this species in the past (Disney, 1984). Eight from *Pluteus cervinus* (Schaeff. ex. Fr.) Kummer collected from Poet's Breck, Honingham, Norfolk on 24 September 1983. It has been reared from two other species of *Pluteus* (Colyer, 1954, Disney and Evans, 1982) and from a *Pleurotus* (Disney and Evans, 1979).

Discussion

The rearings from *Agaricus augustus, A. silvaticus, Coniophora putaena, Gymnopilus hybridus, Lyophyllum fumatofoeteens, Mycena galericulata, Panaeolus subbalteatus, Tricholomopsis platyphylla* and *Tuber aestivum* represent the first published records of named phorids from these fungi.

References

Burh, H. (1965). *Bestimmungstabellen der Gallen (Zoo- und Phytocecidien) an Pflanzen Mittel- und Nordeuropas. Band II.* Gustav. Fischer Verlag, Jena.

Buxton, P.A., 1961. British Diptera associated with fungi. III. Flies of all families reared from about 150 species of fungi. *Entomologist's mon. Mag.* **96**: 61-94.

Chandler, P.J., 1978. In Stubbs, A, and Chandler, P. (Eds). *A Dipterist's Handbook.* The Amateur Entomologists' Society.

Colyer, C.N., 1954. A new species of *Megaselia* (Dipt: Phoridae) from Britain, notes on fungicolous Phoridae. *Entomologist's mon. Mag.* **89**: 108-112.

Colyer, C.N., unpublished. *Notebooks* in British Museum (Natural History).

Disney, R.H.L., 1984. Six species of *Megaselia* (Diptera: Phoridae) from Northern England, new to Britain, and including two new to science. *Naturalist, Hull* **109**: 11-18.

Disney, R.H.L., 1985. Records of scuttle flies (Diptera: Phoridae) from Flatford Mill, including two species new to Britain. *Trans. Suffolk Nat. Soc.* **21**: 13-17.

Disney, R.H.L. and Evans, R.E., 1978. Two species of Phoridae (Dipt.) reared from fungi. *Entomologist's mon. Mag.* **113**: 165.

Disney, R.H.L. and Evans, R.E., 1979. Further records of Phoridae (Dipt.) reared from fungi. *Entomologist's mon. Mag.* **114**: 166.

Disney, R.H.L. and Evans, R.E., 1982. Records of Phoridae (Diptera) reared from fungi. *Entomologist's Rec. J. Var.* **94**: 104-105.

Disney, R.H.L. and Gunn, L.C., 1980. Some scuttle flies (Dipt:Phoridae) from emergence traps over raspberry stools in Scotland. *Entomologist's mon. Mag.* **115**: 23-25.

Eisfelder, I., 1956. Die haufigsten Pilzbewohner (Fliegen als Pilsverzehrer). *Z. Pilzk.* **22**: 108-117.

Phillips, R., 1981. *Mushrooms and other fungi of Great Britain and Europe.* Pan Books, London.

Preece, T.F. and Redshaw, K., 1978. *Tuber aestivum* Vitt. — truffles growing at Headingley, Leeds. *Naturalist, Hull* **103**: 109-112.

Schmitz, H., 1948. Zur Kenntnis der fungicolen Buckelfliegen. *Natuurh. Maandbl.* **37**: 37-44.

DROPEPHYLLA GRACILICORNIS FAIRM. AND LAB. (COL.:STAPHYLINIDAE) IN VARIED HABITATS.— Following my friend Prof. Owen's interesting notes on *Phyllodrepa salicis* Gyll. (1988, *Entomologist's mon. Mag.* **124**: 35) I offer some remarks on one of its smaller relatives which is not much better known in Britain. There seem few published records of the above scarce Omaliine beyond those in Fowler and Donisthorpe (1913, *Col. Brit. Isl.* **6**: 243), where localities in Berkshire, Cumberland, Isle of Wight and County Durham are listed. Tottenham (*Handb. Ident. Brit. Ins.* **4**(8a): 22) says only "Under bark; rare, a few scattered localities". Fowler had earlier (1888, *Col. Brit. Isl.* **2**: 420) reported one from the London district (Rye) and numbers at Balmuto, Fifeshire (Power). Fowler and Donisthorpe (*loc. cit.*) add an interesting observation respecting biotope: "Mr Piffard has recorded that *Homalium gracilicorne* and *brevicorne* [the latter being in fact *D. grandiloqua* Luze — cf. Champion, 1912, *Entomologist's mon. Mag.* **48**: 44] are to be found in the lichen on branches of oak recently blown down". This points to a wider habitat than the strictly subcortical, as also do the following data from examples (carefully checked) in my collection, taken by the late G.H. Ashe: Wicken, Cambs/reed refuse/20.vii.55 (1); Shute Park, Colyton, S. Devon/nest of *Lasius fuliginosus*/26.v.57 (3). Since *D. gracilicornis* is not otherwise known to be myrmecophilous, this last must probably be regarded as accidental. I have also a Dorset specimen (Crichel, 8.vi.36, P. Harwood); and have seen one from Moccas Park, Herefordshire taken by R.W. Lloyd. A.A. ALLEN, 49 Moltcalm Road, Charlton, London SE7 8QG.

BUTTERFLIES ON EL HIERRO

By DENIS F. OWEN,* DAVID A.S. SMITH and ALLISTER G. SMITH

El Hierro, the smallest of the Canary Islands, has an area of only 278 km^2 and a maximum elevation of 1500 m. Like the other outer Canaries it is volcanic and, despite its small size, is enormously varied in vegetation, a feature associated with dramatic local differences in rainfall and (especially) cloud formation. There is laurel forest on the northern slopes above El Golfo and extensive *Pinus canariensis* forest on the south side of the central mountainous plateau. Much of the south and west of the island is volcanic desert with a sparse vegetation unsuitable for most butterflies, except in the towns and villages where garden flowers and crops attract a few species. Grassy meadows, chiefly in the north-east, support a huge population of *Maniola jurtina* and smaller numbers of other species.

We visited El Hierro in June 1987 essentially to examine variation in *Maniola jurtina* and to check for the possible presence of *Pararge xiphioides*. We found only nine species of butterflies and record them because few entomologists seem to have visited the island mainly, we suspect, because compared to other islands in the Canaries, it is relatively impoverished.

Artogeia rapae (L.). Small white. Frequent near cultivation, less common elsewhere. One larva was found on an alien *Reseda* sp along with three larvae of *Pontia daplidice*. Many pupae were found in a Valverde town garden attached to the leaves of a native shrub, *Rumex lunaria,* having recently fed on a nearby alien, *Tropaeolum majus.* Larvae were also found on cultivated *Brassica oleracea.*

Pontia daplidice (L.). Bath white. Widespread and often the only butterfly in arid habitats; less frequent among cultivation and at well-vegetated sites. Larvae in all instars common on alien *Reseda* spp.

Lycaena phlaeas. Small copper. Chiefly in ones and twos and common only in open *Pinus canariensis* forest.

Aricia agestis cramera Eschscholtz. Brown argus. Four seen, all in grassy places chiefly inhabited by *Maniola jurtina.* This is possibly the first record for the island as it is not listed by Higgins and Riley (1983).

Vanessa atalanta (L.). Red admiral. One in a garden at Valverde. Throughout the Canaries this species is far less common than *Vanessa indica* and is nearly always seen in towns and gardens.

Vanessa indica calliroe Hübn. Indian red admiral. Widespread except in very arid areas and particularly common in laurel forest above El Golfo where females were observed laying on *Urtica morifolia,* the

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dominant understorey plant in the forest. Eggs are laid on the upperside of terminal leaves, usually singly but one female three times laid two eggs side by side. Larvae in all stages were abundant on *Urtica moriflora* growing in deep shade.

Cynthia cardui (L.). Painted lady. In ones and twos in most habitats except laurel forest and extremely arid areas. A larva and two pupae were found on an unidentified alien thistle.

Maniola jurtina hispulla Esper. Meadow brown. Both males and females were abundant in grassy areas, often sheltering from the wind in gulleys and hollows. The grass was mostly dead and the butterflies had evidently been out for some weeks. No mated pairs were seen and a high proportion of males was worn and old. Females were seen entering *Pinus canariensis* forest, possibly to aestivate, but also feeding from flowers, particularly the labiate, *Micromeria varia.*

Danaus plexippus (L.). Monarch. Eggs, larvae and pupae were common on *Gomphocarpus fruticosus,* a shrubby African milkweed grown in Valverde an an ornamental, and apparently not previously recorded on El Hierro (David Bramwell *in litt.*). Adult butterflies were seen in the towns of Pinar and Frontera, confirming the view that in the Canary Islands this is essentially a town species.

A "blue" was seen, probably a long-tailed blue, *Lampides boeticus* (L.), as the Canary blue, *Cycliurus webbianus* Brullé, is not recorded from El Hierro (Higgins and Riley 1983). We were probably too early in the year for *Pseudotergumia wyssi bacchus* Higgins, a subspecies of the Canary grayling confined to the islands of El Hierro and La Gomera. A special search was made for the speckled wood, *Pararge xiphioides,* reported as absent from El Hierro, and we reached the conclusion that although the laurel forest looks suitable, there is not enough grass, the ground layer being dominated by *Urtica morifolia.* After we left the island we spent three days on Tenerife and easily found nineteen species of butterflies, a striking reminder of the faunistic impoverishment of El Hierro.

Reference

Higgins, L.G. and Riley, N.D. 1983. *A field guide to the butterflies of Britain and Europe.* Collins, London.

Correction

In our note on *Cis dentatus* which was published in the recent issue of the *Ent. Rec.* (**100**: 188) we have very regrettably referred to Mr E.W. Aubrook as deceased. In this we have been totally mistaken and we would like to offer our sincere apologies to Mr Aubrook and to his family and friends for any distress we may have caused by our error. I.S. Carter, 165 Leckhampton Road, Cheltenham, Glos. GL53 0AD and J.A. Owen, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

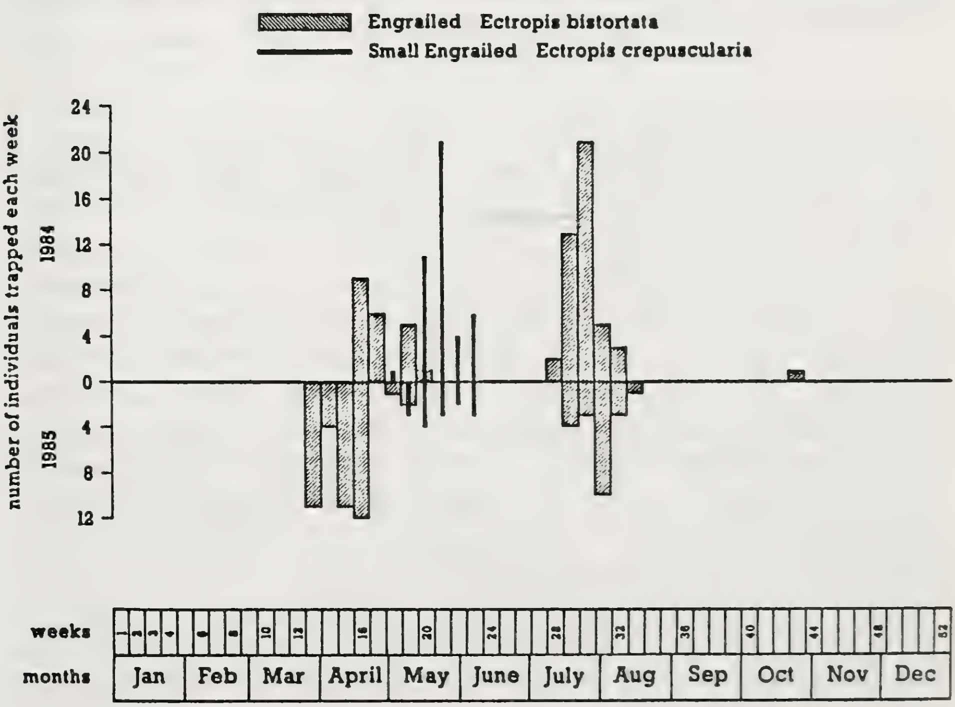
THIRD BROOD SPECIMENS OF *ECTROPIS BISTORTATA* GOEZE (LEP.: GEOMETRIDAE)

By P. Waring

With reference to Mr West's note on the frequency or infrequency of third brood specimens of the moth, *Ectropis bistortata,* I took a specimen of this species on 22 October 1984 in Oakley Wood which is part of the woods collectively known as Bernwood Forest on the Oxfordshire/Buckinghamshire border. I can offer some data on the relative frequency at moth traps of these probably third brood specimens in relation to the other two broods of *Ectropis bistortata* and to the occurrence of the small engrailed, *Ectropis crepuscularia* with which second brood engrailed in particular are sometimes confused.

From January 1984 to December 1985 I operated six Actinic traps (Heath 1965) simultaneously on one night per week every week at fixed sites within Oakley Wood. The accompanying chart shows the total weekly catches of *E. bistortata* and *E. crepuscularia* for the six traps. The weeks of the year are numbered consecutively from 1 January. Adults of the second brood of engraileds, *E. bistortata,* were trapped over a period of five weeks from early July into August in both years. This is similar to the situation that Mr West observed in Kent. In

The numbers of Engrailed and Small Engrailed moths trapped on weekly visits to Oakley Wood, Bucks. during 1984 and 1985.



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1984 a single third brood specimen was recorded but no such specimens were seen in 1985. In a total of forty seven complete nights of moth trapping in Oakley Wood and elsewhere in Bernwood Forest between September and early November (1984-1986) this is the only third brood engrailed I have captured.

The third brood specimen is notable in having a wing span of 33mm, which is much larger than any second brood individual trapped in Bernwood. Eight of the latter, including both sexes, are present in the Bernwood collection and all are between 27 and 29mm in span. The third brood specimen is closer in appearance to typical first brood individuals. Nine of these spring individuals are in the Bernwood collection and all but one are greater than 30mm in wing span (mean 31.7, extremes 28-34mm). It is common experience that lepidopterous larvae develop faster at higher temperatures and produce smaller adults and this presumably accounts for the size variation between the broods of the engrailed. The fact that Bernwood Forest is a noted frost hollow may explain why third brood engrailed are apparently a rare event there.

Acknowledgement

I would like to acknowledge the support of Oxford Polytechnic during the course of the fieldwork.

References

Heath, J. 1965. A genuinely portable MV light trap. *Entomologist's Rec. J. Var.* **77**: 236-238.

West, B.K. 1987. Third brood specimens of *Ectropis bistortata* Goeze (Lep: Geometridae). *Entomologist's Rec. J. Var.* **99**: 84-85.

STRIPED HAWK-MOTH, HYLES LINEATA LIVORNICA (ESP.) (LEP.: SPHINGIDAE.)— On the evening of 6th May, 1988 while at Puerto Pollenca, Mallorca the sun faded out as a dense orange-red cloud spread over the horizon to the south. During the following hours dust of the same orange-red colour as the cloud began to fall. It was quite calm and very quiet. My wife and friends moved to the shelter of a covered area near a pool, which was brightly illuminated, when my attention was drawn by the number of striped hawk-moths that suddenly appeared. The first one flew into the pool which I caught to confirm its identity and to show it to my friends before releasing it. Another striped hawk-moth flew into the 'Insect-o-cutor' and was incinerated, much to everyone's horror while at least three others flew past the dancers in the bar to alight and remain passively on the innermost wall. Neither this nor any other species of hawk-moth was seen during the following week and one can only conclude that the striped hawk-moths came over in the dust storm that evening. PHILIP M. MILES, Werndeg, Cnwch, Coch, Aberystwyth, Dyfed, Wales.

SPATHIUS CURVICAUDIS RATZEBURG (HYM.: BRACONIDAE) NEW TO BRITAIN AND PARASITISING *AGRILUS PANNONICUS* (PILLER AND MITTERPACHER) (COL.: BUPRESTIDAE).

By M.R. Shaw*

Recent papers in this Journal (Foster, 1987; Allen, 1988) and elsewhere (Godfrey, 1987) indicate an apparent upturn in the fortunes of the rare buprestid beetle *Agrilus pannonicus* (Piller and Mitterpacher) since its British status and history were reviewed by Allen in 1973. I am prompted to add to this chronicle by recording the presence in Britain of the doryctine braconid, *Spathius curvicaudis* Ratzeburg, which is probably specialised to bark-inhabiting buprestids and has recently been reared twice, almost certainly from *A. pannonicus,* at Windsor Great Park, Berkshire.

The first occasion was when J.A. Owen reared a brood of ten females and one male in June 1985 from a single mass of 14 cocoons collected in March 1985 in the bark of a living oak heavily infested by *A. pannonicus,* and the second was a brood of nine females and four males reared in July 1986 by H. Mendel from bark collected from the same tree in March 1986. In addition is one female specimen fogged from mature oak canopy at Richmond Park, Surrey, by N.E. Stork on 18.viii.1983; the first to be identified in Britain, but perhaps particularly noteworthy in view of Allen's (1988) comment that a specimen of *A. pannonicus* was fogged at the same site in June 1984, and the suggestion that the beetle may regularly breed high in the tree.

S. curvicaudis differs from all other species of *Spathius* known to occur in Britain by its markedly up-curved ovipositor (see Nixon, 1943: 201, fig. 16), which projects beyond the apex of the gaster by about the latter's length. The available British specimens clearly belong to the *exarator*-group, but then do not run easily to *curvicaudis* in Nixon's (1943) key because they mostly have only very indistinct coriaceous sculpture towards the base of tergite (2+3), and in some specimens as much as the basal third of the hind tibia is pale. In Hedqvist's (1976) key to the European species of *Spathius* these British specimens have another rough ride: this time it is their rather strongly trans-striate frons and heavily fasciated wings that prevents them from running smoothly to *curvicaudis*. However, they fit Ratzeburg's (1844: 49) original description tolerably well, especially in regard to their heavily fasciated wings ("Flugel schön grau und weiss gefleckt"), and no other European species has a similar ovipositor. Ratzeburg's type (now evidently lost: Konigsmann, 1964) was reared from part of a living tree in which an unidentified buprestid was developing and (despite the shortcomings of their keys, which seem to depend on unstable characters) both Nixon

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(1943) and Hedqvist (1973) record species of *Agrilus,* including *pannonicus* (as *biguttatus* (Fabricius)), as hosts. The present records appear to be the first to state that it is gregarious, but are otherwise consistent with what is known of the biology of *curvicaudis* in Europe.

It is always pleasing to note that a parasitoid that is possibly dependent, at least locally, on an exceedingly restricted and scarce insect host has nevertheless managed to persist through lean times, for it is hard to imagine that *S. curvicaudis* could be a recent arrival in Britain. I urge particular tolerance for this interesting species, bearing in mind that it is probably a good deal less secure than its host. Also, it is not impossible that the combination of beetle-plus-parasitoid may be in some respect more viable than the beetle alone.

Except that I have deposited two females and one male from the series reared by H. Mendel in the British Museum (Natural History), all of the above material is now in the collections of the National Museums of Scotland.

Acknowledgements

I am grateful to John Owen and Howard Mendel for saving reared parasitoids for me, and to Nigel Stork for giving me ichneumonoids that he fogged from oak canopy at Richmond Park on 18.viii.1983. Tom Huddleston kindly made the collections of British *Spathius* in the British Museum (Natural History) available to me.

References

Allen, A.A. 1973. *Agrilus biguttatus* F. (Col., Buprestidae) at Windsor; with some account of its history in Britain. *Entomologist's Rec. J. Var.* **85**: 12-14.

Allen, A.A. 1988. Notes on *Agrilus pannonicus* Pill. and Mitt. (Col.: Buprestidae) in 1985. *Entomologist's Rec. J. Var.* **100**: 25-28.

Foster, A.P., 1987. *Agrilus pannonicus* (Piller & Mitterpacher, 1783) (Col.: Buprestidae) and other noteworthy insects recorded from Hampstead Heath in 1984. *Entomologist's Rec. J. Var.* **99**: 153-155.

Godfrey, A.R., 1987. *Agrilus pannonicus* (Pill. & Mitt.) (Col., Buprestidae) in Windsor. *Entomologist's mon. Mag.* **123**: 40.

Hedqvist, K-J., 1976. New species of *Spathius* Nees, 1818 and a key to the species of Europe and Canary Islands (Hym. Ichneumonoidea, Braconidae). *EOS Madr.* **51** (1975): 51-63.

Königsmann, E., 1964. Braconidae aus den Resten der Ratzeburg-Sammlung (Hymenoptera). *Beitr. Ent., Berlin* **14**: 631-661.

Nixon, G.E.J., 1943. A revision of the Spathiinae of the Old World (Hymenoptera, Braconidae). *Trans. R. ent. Soc. Lond.* **93**: 173-456.

Ratzeburg, J.T.C., 1844. *Die Ichneumonen der Forstinsecten* **1**. Berlin.

A REVISED KEY TO THE VARIETIES OF *RHAGIUM BIFASCIATUM* F., (COL.: CERAMBYCIDAE)

By Raymond R. Uhthoff-Kaufmann*

More than forty years have elapsed since the publication of the keys to the identification of the varietal forms of *Rhagium bifasciatum* F., most of which have been taken in this country. Some more varieties have been found, described and figured since then, such that a new, revised and improved key is needed to accommodate them; and at the same time to correct a few inaccuracies, to which attention is drawn after the key.

The larva of *R. bifasciatum* is of economic importance in that it rarely attacks living trees, unlike some Longicorns, or if it does it is usually confined to the deteriorating parts — dying limbs etc. The larva is beneficial to forestry: its predilection for rotten moist wood — it frequently takes over from the ravages caused by other Cerambycids, such as *Asemum striatum* L. and *Arhopalus rusticus* L. —helps to break down felled logs, boles, stumps and roots.

Polyphagous in habit, the larva has been found with the following: alder, ash, beech, birch, buckthorn, chestnut, elder, fir, hawthorn, hornbeam, larch, laurel, oak, pear, pine (Scots pine is a favourite pabulum), poplar, rowan, sour cherry, spruce and willow. Donovan amusingly states, "It is generally found in putrid flesh."(!) Under normal circumstances larval development takes two years, depending upon when ovipositing occurs and on local conditions.

Pupation, in either sapwood or deeper down in the heartwood if sufficiently wet and rotten, takes place in the late summer months and eclosion thence until the winter, but the imago stays in its pupal cell throughout the winter, emerging in the spring. All three stages of development are often present in the same habitat, larva, pupa and semi-dormant inactive perfect insect; consequently the imagines may be found throughout the year, just resting under the loose bark.

A number of parasitic Hymenoptera prey on the larva, among which are enumerated: *Coeloides (Coelobracon) initiator* F., *Bracon leucogaster* Zgrl., *Echthrus reluctator* L., *Xorides rufipes* Gr., *X. irrigator* F., *Ischnoceros filicornis* Kreichb., *I. caligatus* Grav., *Colecentrus excitator* Poda and *Iphiaulax impostor* Scop. It is also parasitized by the threadworm *Bradynema strasseni* Wülker. Other predators include the Coleoptera, *Nudobius lentus* Er., *Opillo mollis* L. and *Thanasimus formicarius* L.

The adult beetle's habits differ from those of many of our Longicorns in that it is not found feeding on flowers; more usually it occurs crawling along the ground, taking off on short flights to settle again either there or on adjacent timber lying in sunlit woodland rides and open spaces, somewhat reminiscent of the Tiger beetle (*Cicindela*), but

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Fig. 1. Distribution of *Rhagium bifasciatum* F. in the British Isles.

it has been swept from dogrose, apple and hawthorn blossom, rhododendrons, *Viburnum*, various *Umbelliferae* and freshly cut fir and pine branches.

The imagines have been found in almost every English county, and apart from a few central areas, in most of Wales. Scotland too has been well worked, with records from the Lowlands to the Highlands, the Inner Hebrides and the Clyde islands. Irish records are scantier, confined largely to the south-western, northern and south-eastern coastal counties, due more to a lack of observers than to that of the beetle (see distribution map).

R. bifasciatum, despite its general occurrence throughout the British Isles, is a local insect; when it is found it may often be by the hundred. There is no hard evidence to suggest that its varieties are confined to any particular region or subject to special climatic or other conditions; for example, the nigrescent forms have been captured in one end of the same log as the commoner bleached variety at the other. Nevertheless, hardly any variations have been recorded from Scotland or the Principality. Several Continental authorities opine that the northern and sub-alpine regions of Europe produce the most varieties.

There is some disagreement about this: in northern England high numbers have been captured in Lancashire, Yorkshire and Cheshire; in the south, Surrey, that popular hunting ground, has contributed as many colour forms as any other district. Further, those authors emphasize that the albinotic forms are more likely to be encountered in montane areas. That is not, however, the general experience; if the locality is right — ancient neglected fellings, especially old pine woods, for instance, and at any height — varieties have abounded, reaching proportions of 25- 30% of the total *bifasciatum* population; elsewhere, in apparently similar areas and conditions, only the type form occurs. It may be stated unequivocally that while the yellow varieties are the commonest with us, the melanic, and particularly the rufous forms, are decidedly rare, of which there are very few recorded British examples.

Great care has been taken to compare Professor Villiers' and the late Dr Blair's excellent drawings of the varieties of *R. bifasciatum* with the British keys of 1945-46; with hardly an exception, figures and descriptions tally. This cannot be said of the sketches by M. Podany who is at pains to comment that he found it difficult to match the elytral patterns with the details given by their authors, who, he states, should have illustrated their written work. It is the unfortunate case that many of his own figures do not bear any relation at all to the varieties that have been described. It suffices to say that of the 22 figures of *R. bifasciatum* in his monograph on the genus only eight may be equated with the variations elsewhere published. It is not the intention to traverse M. Podany's work other than to add that his own text does not correspond with the illustrations he provides.

On the Continent variation in *Rhagium bifasciatum* is well known (and as well documented) as it is here, holding a recognized place in the European and palaearctic catalogues. This is not so, where it concerns the Cerambycidae, in the latest British Check List, remarkable as much for its omissions as for its additions.

KEY TO THE VARIETIES OF *RHAGIUM BIFASCIATUM* F.

"Les variétiés sont des modifications visibles . . ."

Maurice Pic

(Bracketed numbers and letters link contrasting forms.)

I. Yellow fasciae reduced (II).

a. Ground colour largely bronze-black; marginal red along elytral edges and apex normal (b).
Anterior fasciae divided, reduced or absent.

1. Posterior fasciae also absent . . . . v. *infasciatum* Pic (3)
2. Posterior fasciae divided and greatly reduced . . . v. *blairi* Kaufm. (1)
3. Posterior fasciae whole but reduced . . . . v. *bistrinotatum* Pic (2)

b. Ground colour conspicuously red (a).

4. Encroaches upon apical third of elytra. Anterior fasciae whole; posterior fasciae obliterated . . . . . . v. *unifasciatum* Muls. (6)
5. Spreads from apex to anterior fasciae; posterior fasciae slightly reduced or divided . . . . v. *deyrollei* Pic (8)
6. Anterior fasciae whole; posterior fasciae reduced to a single maculation . . . . v. *apicepunctatum* Podany (4)
7. Covers whole elytra except basal and apical thirds; fasciae completely absent or anterior ones faintly outlined . . . . v. *bicolor* Oliv. (25)
8. Elytra almost entirely red; extreme base and a thick sutural line between fasciae, black; fasciae almost normal . . . . v. *dvoraki* Niedl (5)
9. Elytra largely red except for a sub-sutural black patch; anterior fasciae normal; posterior fasciae absent v. *rufum* Prell (26)

II. Yellow fasciae enlarged but *not* confluent (III).
Ground colour largely bronze-black; marginal red normal.
Fasciae dentate along lower edges, smoother above. Elytral apex broadly red.

10. Posterior fasciae broad, almost meeting laterally along suture, leaving dark ground colour between the two sets prominent . . . . v. *latefasciatum* Pic = *fasciatum* Pic (11)
11. Both fasciae broadened and strongly dentate . . . . v. *dentatofasciatum* Kaufm. (10)
12. Posterior fasciae very broad, spreading towards elytral apex . . . . v. *lituratum* Fügn. (13)
13. Anterior fasciae spread almost to elytral shoulders. Apical third of elytra entirely yellow. Suture edged black. Dark elytral background roughly cruciform . . . . v. *mediofasciatum* Pic (23)*

III. Yellow fasciae enlarged and confluent (I).
Marginal red normal.

c. Elytral striae outlined with black streaks, either interrupted or of varying lengths (d).

* *vide* notes on nomenclature *infra.*

14. Elytral base broadly, and suture narrowly bronze-black. Fasciae meet along suture and extend almost to elytral shoulders and apex. With three very short central to marginal black streaks and a single sub-sutural one at elytral apex ....v. *quentini* nov. (15)
15. Fasciae do not quite reach shoulders and apex. With a small sub-sutural streaky black maculation at elytral apex.............................v. *bimaculatum* Marsh. (14)
16. With two black median lines, the longer nearer the suture; occasionally with traces of a third streak at the elytral margins or apex ....v. *virgatum* Kaufm. (17)
17. With two or three longish, sometimes broken black lines ....v. *nigrolineatum* Donovan (16)
18. Fasciae cover two-thirds of elytra, leaving base black and apex red. With three long uninterrupted black lines ....v. *multilineatum* Pic (19)
19. Elytra entirely yellow with three long but feinter broken lines ....v. *andreae* Vill. (18)

d. Elytra without black streaks or lines (c).

20. Background diagonally divided: bronze-black from base to beyond posterior fasciae along suture; red from humeral boss along elytral margins to a broad apical third. Fasciae narrowly joined medianly forming overall an elongated broken O pattern ....v. *klinzigi* Podany (24)
Anterior and posterior fasciae produced to meet along suture. Elytral base and most of apex bronze-black.
21. Connection narrow ....v. *gravei* Hubenth. (22)
22. Connection broad ....v. *connexum* Everts (21)
23. Similar to *mediofasciatum*, but fasciae joined at the margins ....v. *apicepallidum* Pic (13)
24. Broad fascial connection meets at both suture and margins; with a large central sutural black maculation ....v. *medionotatum* Pic (20)
25. Fascial connection almost complete; elytral base and apex bronze-black; margins narrowly red ....v. *ornatum F.* = *dorsalis* Marsh. = *ecoffeti* Muls. (7)
26. Elytra almost wholly yellow save a black triangular scutellar patch ....v. *lebisi* Dayr. (9)
27. Similar, fused fasciae occupying two-thirds of elytral surface; elytral margins and tip of apex narrowly red; base broadly black ....v. *simoni* Pic (28)
28. Extreme elytral base only dark, otherwise entirely yellow ....v. *ictericum* Schleicher (27)

NOTES ON NOMENCLATURE

2. v. *blairi* Kaufm.: when this figure was first published in 1944, the editor of the *Entomologist's mon. Mag.* commented that it was on the small side. That, and the poor quality of war-time paper, resulted in the reduced posterior elytral maculations being nearly obliterated upon publication. Villiers' f. 167 does not represent the true *blairi,* but is almost identical with his version of *infasciatum* Pic, f. 168. Podany's two diagrams do not fit at all: the posterior maculations are wrongly slanted.
5. v. *deyrollei* Pic: described by Pic from Trebizond, Turkey. The only British specimen seen is that arranged by J.R. Hardy *in coll.* Manchester Museum.
11. v. *dentatofasciatum* Kaufm. *nec* Pic; wrongly attributed by Villiers (and obviously a *lapsus calami*). The variety was first described by Kaufmann in 1945.
13. v. *mediofasciatum* Pic *nec* 1912: = ? *latefasciatum* (Villiers, f. 189). This name is quoted with bibliographical references by Winkler, Blair, Podany etc, but these are totally incorrect; Villiers omits the name but its description meets that of *latefasciatum,* with which in future taxonomists may tentatively wish to sink it as synonymous.
14. v. *quentini mihi*: named in honour of M. R.M. Quentin of the Department of Applied Entomology, Natural History Museum, Paris.
15. v. *bimaculatum* Marsh.: this is a unique example and the type *teste* Blair, now in the J.F. Stephens collection (BM (NH)), and presumably acquired from the D. Francis cabinet, mentioned by Marsham. The specimen is data-less; it has been suggested that it was collected in northern England: there is no sound evidence for this.
17. v. *nigrolineatum* Donovan: also represented in the Stephens collection by a single specimen, *sine data,* assumed to come from the Francis collection. It is illustrated by Donovan from an example taken by Jean Francillon, with acknowledgements to the Marsham MS. Plavil'shchikov gives it in his Soviet lists; it is excluded by Dr Heyrovsky.

21 & 22. v. *gravei* Hubenth. and v. *connexum* Everts: these are sufficiently distinct in appearance, based on the difference in the width of the fascial confluence to retain the latter as a separate variety.

23. v. *apicepallidum* Pic: Villiers' f. 186 does not correpond with Simon's f. 4/C; hence, it has been assigned to group IIId.
24. v. *medionotatum* Pic: this was originally described from Hungary.
25. v. *ornatum* F.: beautifully illustrated by Martyn and the earliest depiction in British entomological works, predating the Marshamian diagnosis (v. *dorsalis*) by a decade. Figured by

Donovan two years later. The Stephensian example (labelled *dorsalis* Marsh.) was also possibly acquired from the D. Phillips collection; first captured near Manchester.

27. v. *lebisi* Dayr.: placed by Villiers in the group with a red elytral background. After careful consideration of Dayrem's article, the emphasis of the description is on balance yellow with a reddish tinge (*jaune rougeâtre*) — Dayrem makes a point of referring to the elytral margins as pale red rather than reddish-yellow. Dr Blair was in agreement with this. *Lebisi* may have lost some of its butter yellow coloration and have darkened to a deeper tint when examined by Professor Villiers.

    Podany depicts the overall colour as yellow; Pic, too refers to the elytra as characteristically '*clair*'.

28. v. *simoni* Pic *nec* Blair: surprisingly overlooked by Villiers who illustrates *apicepallidum* from Pic's same paper. By a strange coincidence Pic had named this variety *simoni* late in 1939, a fact evidently unknown to Blair who also named it *simoni* a year later, an oversight perhaps due to a failure in exchanging publications because of war-time restrictions. Blair had named this form based on Simon's sketch and on two specimens found separately by some schoolboys near Harrogate, Yorkshire. These beetles are now in the Uhthoff-Kaufmann collection of British Cerambycidae, Manchester Museum.

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References

Aurivillius, C. 1912. Cerambycidae *in* Junk, W. & Schenkling, S., *Coleopterorum Catalogus,* **39**: 161-162. Berlin.

Bayford, E.G. 1940. British aberrations of *Rhagium bifasciatum* F., *Naturalist,* Sept.: 233-234.

Blair, K.G. 1940. On *Rhagium bifasciatum* F. and its varieties (Col: Cerambycidae), *Entomologist's mon. Mag.* **76**: 206-208.

—. 1940-41. *Rhagium bifasciatum* Fab., and its varieties in Britain, *Proc. S. London ent. nat. Hist. Soc.,* 1940-41: 39-42. 1 plate (10 figs.)

Cox, H.E. 1874. *Handbook of British Coleoptera,* 2. London.

Curtis, J. 1837. *A guide to the arrangement of British insects,* 2nd ed. London.

—. 1839. *British Entomology,* Coleoptera, **16.** London.

Dayrem, J. 1935. *Rhagium bifasciatum* F. v. *lebisi, Misc. ent.,* **36** (4): 25.

Demelt, C. von. 1966. *Die Tierwelt Deutschlands,* **52**: 2, Bockkäfer oder Cerambycidae, **1**. Jena.

Deutsche Ent. Zeitschr. 1891, 201.

Donisthorpe, H.StJ.K. 1898. Notes on the British Longicornes, *Entomologist's Rec. J. Var.* **10**: 246-249.
Donovan, E. 1794. *The Natural history of British insects,* **3**: 59, pl. 94, f. 1. London.
—. 1801. *op.cit.,* **10**: 73, pl. 353, f. 1.
—. 1806. *op.cit.,* **11**: 93, pl. 395, f.1.
Duffy, E.A.J. 1953. *A monograph of the immature stages of British and imported Timber Beetles (Cerambycidae).* London.
Everts, E. 1922. *Coleoptera Neerlandica,* **3**. 'S Gravenhage.
Fairmaire, L. and Planet, L-M. 1924. *Histoire naturelle de France, Coléoptères.* Paris.
Fowler, W.W. 1890. *The Coleoptera of the British Islands,* **4**. London.
Freude, H., Harde, K.W. and Lohse, G.A. 1966. *Die Käfer Mitteleuropas,* **9**. Krefeld.
Gemminger, Dr and Harold, B. de 1872. *Catalogus Coleopterorum,* **9**: 2854. Monachii.
Hansen, V. *et al.* 1960. *Catalogus Coleopterorum Fennoscandiae et Daniae* (ed. Lindroth, C.H.): 358-359. Lund.
Harde, K.W. 1984. *A field guide in colour to Beetles,* English edition, Hammond, P.M. London.
Heyden, L. von, Reitter, E. and Weise, J. 1883. *Catalogus Coleopterorum Europae et Caucasi*: 183. 3rd ed. Berlin.
—. 1906. *Catalogus Coleopterorum Europae, Caucasi et Armeniae Rossicae:* 502. 2nd ed. Paskau.
Heyrovsky, L. 1955. *Fauna CSR,* **5**, Cerambycidae. Prague. (Text in Czech).
Hickin, N. 1987. *Longhorn Beetles of the British Isles.* Princes Risborough.
Hubenthal, W. 1902. Ergänzungen zur Thüringer Käferfauna, *Deutsch. ent. Zeitschr.*: 46.
Joy, N.H. 1932. *A practical handbook of British Beetles.* Two vols. London.
Kaufmann, R.R. Uhthoff- 1944. Notes on *Rhagium bifasciatum* F. (Col: Cerambycidae) and its varieties, *Entomologist's mon. Mag.* **80**: 262-263. Four figs.
—, 1945. Further notes on the colour forms of *Rhagium bifasciatum* F. (Col: Cerambycidae), *Entomologist's mon. Mag.* **81**: 186-187. Five figs.
—, 1946. The distribution of *Rhagium bifasciatum* F. and its aberrations in the British Isles, *Naturalist,* Oct.-Dec.: 139-146. One map.
—, 1948. Notes on the distribution of the British Longicorn Coleoptera, *Entomologist's mon. Mag.* **84**: 66-85.
—, 1950. Notes on the aberrational forms of *Rhagium bifasciatum* Fabr. (Coleoptera, Cerambycidae) recently found on the Lancashire Moors, *Raven ent. nat. Hist. Soc.,* Report 1949: 32-34.
Kloet, G.S. and Hincks, W.D. 1977. *A Check List of British Insects,* **11**: (3), Coleoptera and Strepsiptera: 70. 2nd ed. London.
Kühnt, P. 1913. *Illustrierte Bestimmungs Tabellen der Käfer Deutschlands.* Stuttgart.
Linssen, E.F. 1959. *Beetles of the British Isles,* **2**: London.
Marsham, T. 1802. *Entomologia Britannica,* 1, Coleoptera. London.
Martyn, T. 1792. *The English Entomologist,* tab. 25, pl. 2, f. 18; tab. 26, pl. 3, f. 29. London.
Mulsant, M.E. 1839. *Histoire naturelle des Coléoptères de France,* **1**. 1st ed. Paris.

—, 1862-63. *Ibid.* **13**. 2nd ed. Paris.

Pic, M. 1891. *Matériaux pour servir à l'étude des Longicornes,* **1**: 2. Lyons.

—, 1891, Catalogue des Coléoptéres — Longicornes de France, Corse et Algérie, *op. cit.* **1**: 52. Lyons.

—, 1898. Supplément pour la faune Franco-Algérienne, Lepturi, *Rhagium* F., *ibid.* **2**: 3. Lyons.

—, 1898. Catalogue Franco-Algérien (Supplément), *op. cit.,* **2**: 51. Lyons.

—, 1900. Catalogue bibliographique et synonymique des Longicornes d'Europe et des régions avoisinantes: 12-13. Lyons.

—, 1910. *Matériaux pour servir à l'étude des Longicornes,* **7**(2): 17-20. St. Amand.

—, 1914. Notes diverses et diagnoses, *ibid.,* **9** (1): 3. St. Amand.

—, 1939. Notes diverses, nouveautés, L'Echange, **447**: 25.

Picard, F. 1929. *Faune de France,* 20, Coléoptères: Cerambycidae. Paris.

Planet, L-M. 1924. Les Longicornes de France, *Encycl. Ent.,* **2**. Paris.

Plavil'shchikov, N.N. 1936. *Fauna URSS . . .,* Cerambycidae, 1, Moscow Inst. zool. Acad. Sci. URSS., 21. Moscow and Leningrad. (Text in Russian.)

Podany, C. 1954. Cerambycidae, Prionini et Cerambycinae. Principales espèces de Cérambycides et leurs aberrations, *Bull. Soc. ent. Mulhouse,* 1-5. (Supplément).

—, 1961. *Ibid., op. cit.,* 126-127.

—, 1962. *Ibid., op. cit.,* 144-145.

—, 1964. Monographie des genus *Rhagium* Fabricius (Col. Cerambycidae, Stenocorini), *Acta Zool. Mex.,* **7** (1): 10-11; 40-47, 22 figs., 1 pl. Mexico.

Prell, H. 1908. *Rhagium bifasciatum* Fab. ab. *rufa* (nov. ab.), *Ent. Blätt. Schwab.,* **4**: 136-137.

Reitter, E. 1912 [1913] *Fauna Germanica, die Käfer des Deutschen Reiches,* **4**. Stuttgart.

Samouelle, G. 1819. *The Entomologist's Useful Compendium.* London.

Schleicher, H. 1924. *Uber drei Histeriden und einen Cerambyciden, Ent. Anz.,* **4**(4): 38.

Simon, A. 1939. Sur *Rhagium bifasciatum* F., *Misc. ent.* **40**: 16-17. 10 figs. without names.

Stephens, J.F. 1829. *A systematic catalogue of British insects*: 203. London.

—, 1831. *Illustrations of British Entomology, Mandibulata,* **4**. London.

—, 1839. *A manual of British Coleoptera.* London.

Turton, W. 1806. *A general system of Entomology,* **2**. London.

Villiers, A. 1978. *Faune des Coléoptères de France,* **1**, Cerambycidae. Paris.

Winkler, A. 1929. *Catalogus Coleopterorum regionis palaearcticae,* **10**: 1146. Vienna.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1987

By R.F. BRETHERTON* AND J.M. CHALMERS-HUNT**

(concluded from p. 180)

ANNEXE II

Records of scarcer immigrant species in 1987

Suspected immigrants of resident species are marked *. Unless otherwise indicated, single examples are referred to under each date. Dates for nocturnal species are as far as possible for that at the beginning of the night and are of insects found in traps or otherwise at light. Initials are those of direct recorders or those who have sent in long lists but others are given in full.

Tebenna micalis Mann. DEVON S. The Warren, Nossmayo, a cocoon with dead pupa (gen. det., RJH and K. Sattler), 30.8. Species newly recognised as British. All so-called *T. bjerkandrella* Thunb. bred by RJH in 1982 are in fact *micalis*. Publication awaited.

Euchromius ocellea Haw. (3) DORSET. Portland, 20.9, two. (EG and MHS). SUSSEX W. Walberton, 21.9. (JRT per CRP).

***Platytes alpinella** Hb. (3) DEVON S. Axminster, 14.7, two (ECP-C). KENT W. Horsmonden, 15.7 (ECP-C). Suspected immigrants.

***Evergestis extimalis** Scop. BERKS. Bagley Wood. 10.8 (SN).

***Sitochroa palealis** D. & S. (2) DEVON S. Axminster, 26.7 (ECP-C). SUSSEX E. Peacehaven, 15.8 (CRP).

***Phlyctaenia perlucidalis** Hufn. WILTS S. Dinton, 4.7 (SP).

***Ostrinia nubilalis** Hb. (29) DEVON S. Axminster, 13.7, 4.10, very worn (ECP-C). SUSSEX E. Peacehaven, 13.7, 23.7, 30.7, 17.9 (CRP). SUSSEX W. Walberton, 20/30.6, four; 1/17.7. fourteen; 16/19.9, four; 1.10 (JRT per CRP). Most or all of these perhaps resulted from local establishment after immigration in previous years.

Diasemiopsis ramburialis Dup. (3) ESSEX S. Bradwell-on-Sea, 21.10 (SD). HANTS S. Ringwood, 3.11, male (JHC). WILTS S. Dinton, 19.10 (C. Palmer).

Palpita unionalis Hb. (29) BERKS. Frenham, 20.10 (SN). Aldermaston, 20.10, two (A. Bristow and P. Silver per BRB). DEVON S. Axminster, 3.10 (ECP-C). DORSET Studland, 3.20 (AFJG). ESSEX S. Bradwell-on-Sea, 4.10, 15.10, 20.10 (AJD, SD). HANTS, ISLE OF WIGHT Freshwater, 21.10, 27.10, 31.10, two (SAK-J). HANTS S. Ringwood, 20.10, 21.10, five, 22.10, two (JHC). KENT W. Orpington, 26.10 (RJC); Petts Wood, 26.10 (DO'K). SURREY South Croydon, 20.10 (GAC); Leigh, 21.10, three (RF); Bramley, 30.10 (RFB). SUSSEX W.

* Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 0LE.
**1 Hardcourts Close, West Wickham, Kent BR4 94G.

Walberton, 3.10 (RTR per CRP). WILTS S. Ashton Common, 21.10 (EG and MHS).

***Homoeosoma nebulella** D. & S. DEVON S. Axminster, 1.9 (ECP-C).

Papilio machaon L. MIDDLESEX Scrubbs Wood, 5.7 (L. Holloway). SUSSEX E. Beachy Head, 31.5, flying east on cliff top, with first Sussex record of the black wheatear bird (M.E. Charlwood per CRP). [One found at Hastings, 3.7 (*Bull. amat. ent. Soc.* **46**: 213) is said to have been a release (CRP *in litt.*), and we have been informed that nine bred specimens were released in Essex, 22.7 (CWP *in litt).*]

Iphiclides podilarius L. ESSEX S. Walthamstow, 5.7, found on a pavement by Mrs Sheen (G. Green per CWP). Possibly immigrant, as other immigrants occurred at this time.

***Nymphalis polychloros** L. (3) DORSET Radipole Nature Reserve, 5.5 (P.B. Hardy *in litt.* with photograph). ESSEX S. Bradwell-on-Sea, 24.4, 28.4 (AJD).

Nymphalis antiopa L. SOMERSET S. Fivehead, nr Taunton, 17.10, one watched feeding on bramble blossom. (Duke, *Bull. amat. ent. Soc.* **47:** 42).

***Idaea ochrata** Scop. DEVON S. Axminster, 21.7 (ECP-C). Probably immigrant: the nearest known colonies are in East Kent.

Rhodometra sacraria L. (c.860 imagines, one larva). BERKS v.c.22 Fernham, 22/29.8, seven, 1/12.9, eight, 20.9, 22.9, 2.10, 4.10, two (SN). CORNWALL, SCILLY Tresco, 11.9, by day (PMP). CORNWALL W. Kennack Sands, 16.8 (RHJ); Perranporth, 19.9, two; Dean Point, 19.9, seven (FHNS); Trebrownbridge, 1.9 (AS); Cusgarne, Truro, 2.9, two, red striped (AS); Lizard, 26.8, two, 3.10 (DCGB). CORNWALL E. Persilva, 16.8, 24.8, 1.9, all red striped (D.M. Gibbon per AS); Saltash, October (D. Turner per SM). DEVON S. Axminster 16.8, two with fall of "Sahara dust", 22/31.8, seven, 2.9, three, 6.9, three, 11.9, 17.9, 21.9, seven, 30.10, dark specimen, ? locally bred (ECP-C); Plymstock, 20.9 (JHC); Dawlish Warren, 23.8 (DCGB); Abbotskerswell, 3.9 (BH). DORSET Worth Matravers, 18.8, 22.8, 27.8, young larva, 1.9, three, 16.9 (KNB); Portland BO 18/25.8, five (A. Hughes per CWP); Portland, 18.9, by day (NA), 19.9 (20) (J and MH), 20.9 (23) (EG and MHS); Studland, 19.9, seven (DCGB); Preston, 19/27.8, five, 1/2.9, two, 19/20.9, six, 1.10, two (MC); Radipole Lake 22/29.8, four, 1.9, two, 18.9, three, 20.9; Radipole School, Weymouth, 18/31.8, six, 20.9 (NA); Weymouth, 22.9, on street lamp (MC). ESSEX S. Tillingham, 21.8 (BS); Bradwell-on-Sea, in two traps 20/31.8 (110), 1/5.9 (12), 14/29.9 (48), 1.10, 2.10, 4.10, 31.10 by day, 29.8, 1.9, 21/28.9, six (AJD, SD). ESSEX N. Matching, 1.9, two, with 50 *A. gamma* (RF); Saffron Walden, 4.9, 2.10 (AME). HERTS Bishop's Stortford, 21.9, two (CWP). HANTS ISLE OF WIGHT Freshwater, 22.8, 8.9, three, 19/20.9, six (SAK-J). Newtown Creek, 18.9, several (GEH). HANTS S. Havant, 16.8, 22.8, two, 31.8, 17.9, two, 18.9, three (CBC), 22.8, 10.9, 11.9 (JWP); S. Hayling Island 18/29.8 (15), 1.9, 2.9 (JMW); Parkhill, New Forest, 20.8, two; Ringwood, 21/29.8 (25) (JHC); Highcliffe, Christchurch, 22.8, 1.9, 7.9, 16/20.9, four (EHW);

Southampton, 23.8, 1.9 (J. Codlin per PMP); Aldsworth, 22.8, 19.9 (JWP); New Forest, 24.8 (AHD); Portsmouth, 24.8, 3.9 (I. Laken per PMP); Portsdown, 25.8, 30.8, two, 1.9, 20.9, two (PMP); Titchfield Haven, 20.8, four, 27.8 (MP); Winchester, 23.8, 30.8 (DHS); Browndown, Gosport, 29/30.8, four, 1/8.9 (17) (S. Swift per JWP); Catsfield, Fareham, 3.9, 4.9, 19.9 (D. Powell per PMP), 19.9, four (D.M. Purnell per PMP); Swathling, 30.10 (MGWT). HANTS N. Sparsholt, 17.8, 1.9, nine (AHD), 22/30.9, seven, 11.9, 12.9, 20/24.9, five, 3.10, 31.10 (RAB per BS). Burghclere, 21.8, two, 1.9, 19.9, 1.10 (GGE-F); Highclere, 22.8, 19.9 (RJH); Leckford, 1.9, 20.9 (DHS). HERTS. Bishop's Stortford, 21.9, two (CRP). KENT E. Orlestone, 17.8 (RGC and JMC-H) Dungeness, 29.8, (J and MH); Newington, 29.8, 17.9, 20.9 (RE and CEL). KENT W. Orpington, 17.8, 20.8, 3.10 (RGC); 16.8 (IDF); 20.8, 22.8, three, 26.8 (PAS); Dartford, 21/23.8, six, 17.9, two, 20.9 (BKW); Beckenham, 22.8, two, 4.9 (J and MH); Petts Wood, 21.8, two, 22.8, three, 29.8 (D O'K); Bough Beech, 22.8, six (IDF); Hothfield, 29.8 (D O'K); West Wickham, 29.8 (JMC-H); Bexley, 30.8 (I. Brydon per PAS); Wrotham, 27.9 (AJD). MIDDLESEX Hampstead, 22.8 (RTL); Enfield, 25.8 (A. Hughes per CWP). Northwood, 25.8 (CWP); Fulham, 21.9 (J. Burge per CWP); Osterley Park, 30.8, 4.9 (J. Bradley per CWP). NORTHANTS v.c. 32. Fletton, 11.9 (M. Parsons). NOTTS. Nottingham, 21.9, under a street lamp (M.J. Sterling). OXON. v.c. 23. Caversham, 21.8 (BRB). PEMBS. Dale cliff path, 28.8 (M. Harrop). SURREY Leigh, 21.8, 30.8, 15/23.9, ten, 2.10 (RF); Addington, 2.9, two, 3.9, 8.9, 9.9, 11.9, two 20.9 (BS); Wisley R.H.S. gardens, 30.8, 29.9 (AJH): Coulsdon, 1.9, two (P.M. Stirling); Bramley 1.9, two, 3.9, two, 6.9, 10.9, two, 19.9, 20.9, 22.9 (RFB). SUSSEX W. Walberton, 17/31.8 (23), 1/25.9 (78), 2.10, 3.10, 14.10, 27.10 (RTR per CRP); Rogate, 17/31.8 (42), 1/29.9 (30), 2.10, two (JACG); Petworth, 17.8, two (CRP and S. Botwright); Lyminster 21.8, 22.8, two (CRP); Vann Common, 21.8, two (S. Church per CRP); Worthing, 22.8, three, 29.8, two, 18.9 (SO); Woods Mill, 17.8, 21.8, 23.8, two, 25.8, three (DD). SUSSEX E. Peacehaven, 17/29.8, nine, 2.9, 9.9, 17/22.9, three (CRP); Ringmer, 18.8 (A. Batten per CRP); Brighton, 18.8, 21.8, 21.9, 22.9, 23.9; Lewes, 3.9, 20.9 (R. Leverton per CRP); Hassocks, 19.9; Ashdown Forest, 18.9 (DD); Friston Forest, 18.9, two (CRP) ; Haywards Heath, 24.9 (S. Pooles). WARWICKS. Charlecote, 31.8, 2.9, 22.9 (AFJG), 9.9, two, 16.9 (DCGB). WESTMORLAND Beetham, 19.9, two (J. Briggs). WILTS S. Savernake, 20.9 (SN); Dinton, 2.9 (SP). WORCS. Leigh nr Worcester, 9.9, 19.9, three, 9.10 (ANBS). YORKS v.c. 61. Muston, 20.8 (PQW). MONTGOMERY Newtown, 5.9, worn female, 20.9, female, 30.9 (M. Townsend). Co CORK MID. Fountainstown, 14.9, 19.9, two (AAM). GUERNSEY St Peter Port, 18.8, 20.8, 16/27.9, eight (PDMC); 20/22.9, three (GEH).

Orthonama obstipata Hb. (19) DEVON S. Abbotskerwell, 13.10 (BH). DORSET Portland, 19.9 (J and MH). ESSEX S. Bradwell-on-Sea, 6.10, 13.10, 31.10, 1.11, two, 2.11 (AJD and SD). HANTS S.

Southsea, 21.10 (PHS); Bournemouth 31.10, (I. Reid per DCGB); Ringwood, 31.10 (JHC). KENT E. Newington, 23.10 (RE and CGL); Sandwich Bay, 27.10 (C. Hunter per CWP). SUSSEX E. Ninfield, 30.10 (MP). SUSSEX W. Pagham, 21.10, 27.10 (BS); Walberton, 26.10 (JTR per CRP). WARWICKS Charlcote, 17.9, 31.10 (AFJG).

***Peribatodes secundaria** D. & S. ESSEX S. Bradwell-on-Sea, 7.7, one in large trap. First county record: possibly immigrant, said to differ slightly from East Kent examples of 1985 (AJD).

Agrius convolvuli L. (c. 140 imagines, one larva) BERKS. Fernham, 3.9, 2.10 (SN). CAMBS. Chippenham Fen, 17.9 (PW). CORNWALL SCILLY Tresco, 10.10 (MGWT). CORNWALL W. Lizard, 24.8 (DCGB); Perranporth, 18.9 (K. Selby per FHNS), 22.9 (M. Fairhead); Falmouth Docks, 12.10; Carylon bay, 20.10; Kea, near Truro, c. 20.10 (FHNS). CORNWALL E. Calstock, 31.8, 22.9, two 26.9 (A.G. Maconochie per AS); St. Austell, 4.9 (G. Senior per FHNS); Breney Common, 12.9 (C. Brind and J.L. Gregory per FHNS); Downderry, one larva being reared (R.J. Daniel per SM). DEVON S. Chillington, 16.9, 18.9, 19.9, two, 25.9, three, 29.9, two (HLO'H); Plymstock, 19.9, fertile female (JHC); Chardstock, 23.8 (AJ) Axminster, 23.9, 20.10 (ECP-C). DORSET Portland, 23.8, two, 20.9, two (AJ), 13.9, four, 20.9 (EG and MHS), 16.9, two (BJMcN), 16.9, two, 19.9, five (J and MH), 22.9, ten (RAB per BS); Worth Matravers, 16.9, two (KNB); Studland, 19.9, three (DCGB), 3.10(AFJG); Preston, 21.9 (MC); Radipole School, Weymouth, 9.10 (NA). ESSEX S. Bradwell-on-Sea, 28.7, 7.8, 23.8, two, 26.8, 9.9, two, 16.9, 18.9, two, 20.9, two, 23.9, 24.9, 27.9, 5.10 (AJD and SD). HANTS ISLE OF WIGHT Freshwater, 20.9 (SAK-J). HANTS N. Sparsholt, 20.9 (RAB per BS); Alton, 22.9 (MO). HANTS S. Tichfield Haven, 14.9, 20.9 (PMP); Brockenhurst, 15.9, ab. *grisea* Tutt (A.D.A. Russwurm and H.G. Middleton); Warsash, 23.9 (PMP). NOTTS. Bilborough, 24.9, female found dead on path (M. Raven teste SW). OXON. Charlbury, 27.9, one moribund on footpath (J. Paul per PAS). PEMBS. Dale Fort Field Centre, 27.8, 1.9 (M. Harrop). SURREY Wisley R.H.S. Gardens, 5.10, at rest (AJH). SUSSEX E. Seaford, 5.9 (Porter per CRP); Peacehaven, 5.9, at rest (K. Atkinson per CRP), 17.9, 23.9 at *Nicotiana* (CRP): Hastings, 8.9 (D. Joy per CRP); Brighton, 17.9, at rest (Booth Museum per CRP), 6.10 at *Nicotiana* (per CRP), 6.10 (C. Wollaston per CRP); Hove, 19.9, at rest (V. Hilton per CRP); Southease, 25.9 (per CRP); East Dean, September, several (Living World per CRP); Bexhill, 3.10 (J. Trowell per CRP); Lyminster, 3.10 (R. Pratt per CRP); Fairlight, 10.10, at rest (J. Goodman per CRP); Exceat Country Park, Eastbourne, no date (D. Dey). SUSSEX W. Aldsworth, 19.9 (JWP); Walberton 16.7, 1.9, 9.9, 12.9, 17/21.9, seven, 27.9, 3.10, 4.10, 17.10 (JTR per CRP). WESTMORLAND Beetham, 14.9 (J. Briggs). WILTS S. Dinton, 19.10 (SP). WORCS. Nunnery Wood, 18.9 (per JEG); Leigh, 19.9; Worcester, 19.9 (ANBS). YORKS v.c. 61 Spurn Point, 14.9 (BRS); Rudston, 7.9 (A. Ezard per PQW). YORKS v.c. 64 Harrogate, 24.9, at

rest (A. Murray per IMcF). GLAMORGAN Horton, 18.9, 20.9, 27.9 (BJMcN). ORKNEY Scorradale, 18.8 (RIL); Birsay, 20.8 (S.V. Gauld per RIL). Co. CORK MID Fountainstown, 2.9, 3.9, 13.9 (AAM). GUERNSEY St Peter Port, 1.10 (GEH).

Acherontia atropos L. (7 imagines, 2 larvae, 1 pupa) CORNWALL E. Millbrook, 5.6, one perfect (K. Witts per VT); Pelynt, 30.10 (I. Farlow per SM). KENT E. Newington, 17.8, one pupa, one larva (RE and CEL). LINCS N. Anderby Creek, 4.10, male rescued from the tide (S. Wareing per J. Culpin). NORFOLK E. Sea Palling, mid August, three larvae on tea tree (per RD). SURREY Canfold Woods, 18.6, 24.6, in trap (M. Reed). SUSSEX E. Haywards Heath, 23.9, male (Newnham, *Bull. amat. ent. Soc.* **47**: 35). YORKS v.c. 61 Filey 2.7, found on road (PQW).

Hyles galii Rott. (9 imagines, 6 larvae) BERKS. Pucketty Farm, Faringdon, 26.7 (MHVC). DEVON S. Axminster, 27.7 (ECP-C); Woodbury, 1.8, female, ova infertile (VWP). KENT E. Tankerton, 7.9, three final instar larvae photographed on *Epilobium angustifolium* (A. Cunningham *teste* M. Townsend). NORFOLK W. Downham Market, 27.7 (JH). NOTTS. Cropwell Bishop, 7.10, larva found on path by S. Chambers (S. Swift). SUSSEX E. Peacehaven, 27.7 (CRP); Chiddingly, 31.7 (R. Symington per CRP). SUSSEX W. Walberton, 29.7 (JTR per CRP); Portslade, 9.9, five fully fed larvae on *Godetia* in garden, pupated next day, one emerged indoors early 12 (E.C.P. Bone per CRP). WESTMORLAND South Walney, 24.7 (T. Dean per BS). SHETLAND Mainland, 24.7, one just alive (D. Carstairs per RIL).

Hyles livornica Esp. SUSSEX E. Peasmarsh, 31.7 (T.B. Scott per BS).

***Euproctis chrysorrhoea** L. YORKS. v.c. 61 Spurn Head, 17.7, two (BRS). Possibly immigrant.

***Leucoma salicis** L. (7) WORCS. West Malvern, 3.7; between Bramsford and Leigh, no date, six (ANBS per JEG). Probably locally resident or result of internal spread.

***Lithosia quadra** L. SUSSEX E. Lewes, 11.7 (AME). SUSSEX W. Walberton, 19.9 (JTR per CRP). Possibly immigrant.

Nola aerugula Hb. YORKS. v.c. 61 Spurn Head, 17.7, two (BRS). Probably immigrant.

Eurois occulta L. YORKS. v.c. 61 Muston, 27.7, male, slightly worn (PQW).

Mythimna albipuncta D. & S. HANTS S. South Hayling Island, 6.6, 22.8 (JMW).

Mythimna vitellina Hb. (53) CORNWALL W. Lizard, 24.8, five, 26.8, four, 3.10, four (DCGB); St. Austell, 5.9 (G. Senior per BS); Kynance, 17.8 (RJH); Dean Point, 19.9, two (FHNS). DEVON S. Plymstock, 19.9, (JHC), DORSET Studland 19.9, five (DCGB); Portland, 23.8, 22.9 (AJ), 13.9, four, (EG and MHS), 19.9, five (J and MH); Radipole Lake, 17.9 (MC). ESSEX S. Bradwell-on-Sea, 16.10, 27.10 (AJD & SD). ESSEX N. Saffron Walden, 16.9 (AME). HANTS S. Bishop's Dyke, New Forest, 30.8, infertile female (RAB per BS); Christ

church, 11.9, 15.9 (EHW); Chandler's Ford, 23.9, two (NRJ per PMP); Ringwood, 24.9 (JHC). SUSSEX W. Walberton,17.5, 17.9, 20.9, two, 21.9, 3.10 (JTR per CRP). CO. CORK MID Fountainstown, 12.9 (AAM). GUERNSEY St. Peter Port, 18.9 (PDMC); 1.10 (GEH).

Mythimna unipuncta Haw. (7) CORNWALL W. Lizard, 3.10 (DCGB). DORSET Radipole Lake, 17.9 (M. Cade); Portland, 19.9, two (J and MH); Preston, 21.9 (MC). CO. CORK MID Fountainstown, 19.9 (AAM). GUERNSEY, 2.10 (GEH).

Mythimna loreyi Dup. DORSET Radipole School, Weymouth, 23.8 (NA).

Trachea atriplicis L. JERSEY Trinity, 2.8, in Rothamsted trap (per A.M. Riley).

***Enargia paleacea** Esp. (2) KENT W. Dartford, 15/16.7, male (BKW *Ent. Rec.* **99**: 267). SUSSEX W. Walberton, 14.7 (JTR per CRP).

Apamea lateritia Hufn. (2) ESSEX N. Dovercourt, 10.7, 24.7 (Dr M.E. Anthony per GAP), exhibited to the Essex Lepidoptera panel). (The first date for *lateritia* was incorrectly cited as July 7 in Part I, p. 175.) Probably only the fifth and sixth British records, the first being in Glamorgan c. 1887, the second and third in Surrey and Kent on July 17 and 18 1972 and the fourth was also at Dovercourt on 24.vii.1985. It could, however, be easily overlooked among *Polia bombycina* Hufn.

Spodoptera exigua Hb. (10) DORSET Studland Heath, 28.8, five males, one female (P.J. Baker, BENHS exhibition); Radipole School, Weymouth, 20.9 (NA). ESSEX S. Bradwell-on-Sea, 6.9 (AJD). HANTS ISLE OF WIGHT Freshwater, 14.9 (SAK-J) YORKS v.c. 61 Spurn Head, 29.6 (BRS).

Helicoverpa armigera Hb. (22) CHESHIRE Alderney Edge, 17.9 (CIR). CORNWALL W. Breney Common, 12.9 (C. Brind and J.L Gregory per FHNS). CORNWALL E. Persilva, 1.9 (D.M. Gibson per AS). DEVON S. Axminster, 2.9, (ECP-C). ESSEX S. Bradwell-on-Sea, 20.8, female on buddleia (AJD). HANTS ISLE OF WIGHT Freshwater, 5.10 (SAK-J). HANTS S. Southsea, 19.9 (JRL); Lymington, 27.9 (ASH); St Ives. Ringwood, 4.10, 21.10 (JHC); Christchurch, 19.10, 22.10, both dark females (EHW). HANTS N. Sparsholt, 15.7, male, 22.9, female, 27.10, female, both infertile (RAB per BS). KENT E. Sandwich Bay B.O., 27.10 (I. Hunter *teste* CWP). SUSSEX W. Walberton, 3.10, two, 5.10, two, 15.10, in hurricane (JTR per CRP). CAERNS. Beddgelert, 14.7 (BS).

Heliothis peltigera D. and S. HANTS S. Hayling Island, 11.8 (JMW).

Heliothis viriplaca Hufn. WILTS S. Salisbury Plain, on knapweed flower, 9.8 (SP).

***Deltote bankiana** Fab. SUSSEX E. Ashdown Forest, 7.7 (A.G.J. Butcher per CRP). Possibly immigrant.

Chrysodeixis chalcites Esp. DORSET Portland, 13.9 (EG and MHS).

Diachrysia orichalcea HB. (3) HANTS ISLE OF WIGHT Freshwater, 20.9 (SAK-J). HANTS S. Brockenhurst, 15.8 (A.D.A.

Russwurm and H.G. Middleton). SURREY Addington, 25.8 (BS). All these were shown at the BENHS Exhibition, 1987.

Syngrapha interrogationis L. ORKNEY Hoy, 11.8, one of continental form (F. Fairclough *teste* RIL).

***Catocala nupta** L. WESTMORLAND v.c. 69. Beetham, 3.10 (J. Briggs *Ent. Rec.* **100**: 54). Possibly immigrant: previously known from the north west only in Lancs S., in several years, singly.

Hypena obsitalis Hb. CORNWALL S. Perranporth, 8.11, male found resting outside back door (FHNS *Ent. Rec.* **100**: 44). Only the eighth record for British and Irish mainlands, though now resident in the Channel Isles, where it frequents buildings and shelters.

Cynthia cardui L. in late December and early January, 1987/88. Records so far received from various sources (see also Madge, S. *Ent. Rec.* **100**: 53):- CORNWALL W. Phillack, near Hayle, 18.12; CORNWALL E. St Clear, 25.12; Salter Mill, Cargreen, 25.12; Bodmin Moor, 31.12; Portscatho, 6.i.88. DEVON S. Devonport, 20.12; Branscombe 31.12, three; Beer, 31.12. DORSET Worbarrow Bay, 25.12; Studland, 25.12, Southill, 25.12, Ferrybridge, 31.12, Wyke Regis, 31.12, Weybridge, 31.12. HANTS ISLE OF WIGHT Ventnor, 25.12. HANTS S. Farlingham Marshes, Portsmouth, 22.12, 25.12; Cowherds Marsh, Christchurch, 31.12, two; north of Christchurch, 31.12, with little bustard bird; Pinnock Wood, New Forest, 7.i.88; Stanpit Marsh, Christchurch, 25.12, "nectaring on gorse". SOMERSET W. Chew Valley Lakes, 7.i.88. SUSSEX E. Lewes, 20.12; Brighton, 22.12.

NORTHWARD MIGRATION OF CYNTHIA CARDUI L. (LEP.: NYMPHALIDAE) IN SOUTHERN EUROPE IN SPRING, 1988.— I was interested to read (*Ent. Rec.* **100**: 131 and 132) accounts by Mr T.B. Larsen and Brig. E.C.L. Simson of strong northward movements of the painted lady butterfly (*Cynthia cardui* Linn.) in Portugal during April of this year, and in Morocco in early March. My wife and I were in the Département of Hérault in southern France on 13 April; we arrived at our destination in mid-afternoon, and found *C. cardui* flying, fast and straight, in a northwards direction, until well on into the evening. Individuals were passing us at a rate of about one every two minutes. Next morning, as we drove through the Ardèche, we saw many resting and feeding, but by mid-morning it was evident that the northerly movement was under way once more, and the majority behaving as on the previous day.

At the end of May, I was in northern Spain with my friend Mr Norman Hall, in the dry semi-desert region known as Los Monegros in southern Huesca. Here, full-fed larvae of *C. cardui* were around in utmost abundance, and feeding on many other species of plant than *Carduus* and *Cirsium* spp. When I was preparing to fold up my lamping sheet, which had remained spread on the ground for 48 hours, I found

that several larvae were hanging from the underside, preparatory to pupation. Several adult *C. cardui* were flying in the vicinity at the same time, but did not appear to be freshly emerged.

Lastly, it might be of interest to record that my son, who is Warden of the Scottish Wildlife Trust Reserve at Montrose Basin, Angus, found a specimen of *C. cardui* on the reserve on 16 May, 1988 and saw it every day subsequently until 8 June. B. GOATER, 22 Reddings Avenue, Bushey, Herts WD2 3PB.

CYNTHIA CARDUI L. (LEP.: NYMPHALIDAE) MIGRATING IN ITALY, APRIL 1988— From April 11th to May 4th 1988 I was staying at the Villa San Girolamo at Fiesole, near Florence in Italy. This is a guest house situated at about 1200 ft amongst 15 acres of olive groves. The terraced groves are fully exposed to the sun, with a profusion of wild flowers (as well as escapes from earlier gardens).

Although April 12th was wet, on the 13th a relay of *cardui* appeared to have just arrived, clearly tired and hungry. They were again present on the morning of the 14th, but had moved on by the afternoon. Small numbers were seen daily from 16th to 20th inclusive; none from 21st to 24th (on which day there was heavy rain); with the butterfly returning on 25th April, and remaining in some numbers until 27th. Specimens were also noted on April 29th and on May 1st and 2nd.

Other migratory species noted here in 1988 were *Colias croceus* Fourc., which did not fluctuate so markedly in numbers; *Vanessa atalanta* L. was seen in small numbers on fine days throughout the month; *Macroglossum stellatarum* was seen singly on April 15th, 17th, 18th, 22nd, 23rd, 27th and May 2nd. *Udea ferrugalis* Hbn. was present in some numbers during April.

It is interesting that all these migrant species have been recorded on the Isle of Canna, though *croceus* and *stellatarum* only exceptionally. This year, *cardui* was first seen on Canna on June 10th, an earlier date than in recent years. J.L. CAMPBELL, Isle of Canna, Scotland.

EARLY PAINTED LADIES IN N.W. SCOTLAND— Three *Cynthia cardui* L. were seen flying together in the dunes of Balnakeil beach, on the north coast of Sutherland, on 13th May 1988 and a single specimen spotted in the Inverpolly National Nature Reserve, Wester Ross, eight days later (21st May). These may be long-distance survivors of the northwards migration reported by Torben B. Larsen and Brig. E.C.L. Simson.
DEREK C. HULME, Ord Drive, Muir of Ord, Ross-shire.

FURTHER RECORDS OF THE PAINTED LADY IN 1988— A.R.M. Palmer, of Saxthorpe, Norwich, records *cardui* on the 15th May, and J. Fradgley of Wimborne, Dorset, records the butterfly, a battered specimen, on April 23rd flying in a northerly direction. Of particular interest are two sightings reported by D. Dey: near Littlehampton, Sussex on 21st March, and Hastings, Sussex on 25th March.—Ed.

TACHINUS FLAVOLIMBATUS PAND. (COL.: STAPHYLINIDAE) IN S.E. LONDON — Fairly recently I detected a male of this rarity taken in 1958 (15 November) among plant litter in my former garden at Blackheath. I doubtless passed it at the time as the common *T. marginellus* F., though long aware of the possibility of its occurrence in my area. However, a few years ago my friend Alex Williams, who had just taken *T. flavolimbatus* in the Channel Islands, most kindly gave me a British female with the data 'Egypt Bay, High Halstow, North Kent/K.C. Side' — which prompted a closer inspection of my material and consequent discovery of the Blackheath specimen.

The distinctions are fully described and illustrated by the late W.O. Steel in adding the species to our list (1961, *Entom.*: 77-8). The very clear and sharply defined yellow borders to the thorax and elytra, more conspicuous than in *marginellus*, facilitate recognition; but the important structural characters, in both male and female, lie in the sexual modifications of the apical segments of the hind body.

The British headquarters of this Mediterranean species are in north-west Kent, where a number of examples were collected in two localities in the Gravesend district, 1939-41 — but again, mistaken originally for *T. marginellus* (Steel, *loc. cit.*). Outside this general area, in which it seems not to have been found since except by the late K.C. Side as above, I know of it only from Essex (Hammond) and Cambridge (Steel, 1 ex.). *T. flavolimbatus* may still be overlooked by some, but it is clearly having difficulty in extending its range here. It may be worth noting that the majority, if not all, of our specimens occurred between October and March, so it could perhaps prove to be a winter species like *T. subterraneus* L. A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

CAMPAEA MARGARITATA L. (LEP.: GEOMETRIDAE) AND ITS SECOND BROOD.— The possible existence of a second generation of this species in Kent has a long history reaching back into the last century.

J.M. Chalmers-Hunt (*Butterflies and Moths of Kent,* **3**: 1981) suggests the occurrence of a partial second generation in *some* years, and B. Skinner (*Moths of the British Isles,* 1984) widens the range to 'southern England' and *most* years. My note (*Ent. Rec.* **96**: 126) suggests it probably occurs every year at Dartford, although on somewhat tenuous evidence, for despite operating my garden m.v. trap from 1969, no *margaritata* were noticed during the six years from 1969 to 1974, nor in 1977. In 1975 and 1976 *margaritata* made a token appearance in late August, and several specimens were noted in each of the years 1978 to 1981, but that marked the end of an era in N.W. Kent, the years of the odd sighting of an apparently second generation *margaritata*.

In 1982 a dozen specimens were seen from 11 August until 15 September, and in 1983 the figure had risen to twenty from 14 August to

1 September, ten of which appeared on 31 August; probably more would have been noted if the light had been in operation from the 2nd until the 16th September. The number was about the same in 1984, the specimens being seen from 26 August until 29 September, but the following year from 29 August to 29 September the number rose dramatically to eighty-one, including twelve on 8 September. The second brood was delayed in 1986, not appearing until 2 September, but continuing as late as 14 October, and the light was not operated from 3rd September until 12th September. Nevertheless a total of 43 specimens was noted, with a maximum of seven on September 23rd. One hundred specimens were seen at the light in 1987, including fourteen on September 4th and twelve on the 13th, in the period 20 August to 21 September.

The number of second brood *margaritata* has in several years exceeded the number of first brood specimens, and the number seen on one night is also greater in general, first brood moths usually appearing in ones or twos only. Very few of these second generation insects were found in the trap, like *Opisthograptis luteolata* L. they prefer to settle on the surrounding herbage. As the moths trapped, and those resting nearby, are transported for release to a site over a quarter of a mile away, with woodland in between, very few specimens make a return visit.

A final point of interest is that two of the plants upon which I have found the larvae here are not mentioned in the text books — sweet chestnut (*Castanea sativa*) and horse chestnut (*Aesculus hippocastanum*), the former being a favourite pabulum in Kent. B. K. WEST, 36 Briar Road, Dartford, Kent.

BUTTERFLIES ROOSTING IN HOT WEATHER— The report by John Coutsis (*Ent. Rec.* **100**: 54) of hairstreaks roosting low down in very hot weather supports my own observations made on captive stocks being bred in an insectary. The species in question, which I was recently rearing in very large numbers, are *Pieris brassicae* L., *Vanessa atalanta* L. and *Cynthia cardui* L. It was quite striking how when the temperature exceeded 33-35°C all the butterflies ceased their normal activities of mating, ovipositing, feeding, or just sunning themselves in the case of the nymphalids, and descending to the floor of their cage. In a cage of height 3ft all would be on or within six inches of the floor whereas in normal circumstances some three-quarters of the total number of butterflies would be in the upper half of the cage. This effect has been noticed time and time again in the case of the *brassicae* which I have been rearing for very many years under all sorts of weather conditions.

Another observation on the *brassicae* is that on a few occasions when the hot spell has been prolonged and the temperature has exceeded 33°C for several hours each day, then any subsequent ova laid have been infertile. This temperature also happens to be the lethal point above

which larvae of this species do not survive. While other species will clearly have different temperature points which are lethal, it seems to me that this observation could well explain the decline of some species that has occurred in spite of (or because of) a spell of what may have seemed to us a particularly fine summer. BRIAN O.C. GARDINER, 18 Chesterton Hall Crescent, Cambridge CB4 1AP

ORGYIA ANTIQUA L., THE VAPOURER MOTH (LEP.: LYMANTRIIDAE) IN SHETLAND— at 20.00 hours on September 6th 1987, I was enjoying an evening stroll along the cliffs at Dale of Walls on the west coast of mainland Shetland. The weather was clear and sunny following several days of southerly winds. As I walked, a moth became entangled in my hair, which, on further examination, proved to be a male *antiqua*.

As far as I am aware, this moth has not been previously recorded from Shetland, but is widespread in the British Isles, being recorded to the North from Iceland, and to the south on mainland Orkney and Hoy, where it feeds on willow, rowan or even montbretia. My thanks are due to Mr D. Carstairs for confirming the identity of the moth, and to Mr R.I. Lorimer for his comments on its distribution. C. BARTON, 20 Kenilworth Road, Thornham, Rochdale OL16 4SF.

SCHRANKIA COSTAESTRIGALIS STEPHENS: PINION-STREAKED SNOUT (LEP.: NOCTUIDAE) IN BRECONSHIRE.— Contrary to Mr A.D. Riley's note in *Ent. Rec.* **100**: 141-142, this species appears to have been first noted in Breconshire by R.G. Warren in the Valley of the Afon Pyrddin on July 25, 1952 (cf. Sankey-Barker, Chalmers-Hunt and Parker, *Butterflies and Moths of Breconshire* (1978), p.60).

Furthermore, there is an earlier record for Montgomeryshire of *Eupithecia trisignaria* H.-S. Thus, P.B.M. Allan records it from Aberhafesp in 1944 (cf. Smith, The Butterflies and Moths found in the County of Montgomery etc. *Proc. Chester Soc. nat. Sci. Lit. Art* **3**: 58 (1950)). J. M. CHALMERS-HUNT, 1 Hardcourts Close, West Wickham, Kent.

A MELANIC LYGDIA ADUSTATA L. (LEP.: GEOMETRIDAE) IN HAMPSHIRE— L.W. Newman obtained a feral melanic specimen at Bexley, Kent on 25.iii.1903 which was described and illustrated by E. Cockayne (*Entomologist* **83**: 53) as ab. *plumbosa,* and is now in the National Collection. There seems to have been no further record of this melanic which is deep bluish grey with the normal black markings visible as darker bands, until 29.iv.1987 when a specimen was attracted to my m.v. light at Brockenhurst, Hants. *L. adustata* is a species often noticed settled upon the upper side of leaves, appearing to resemble a bird dropping; melanic forms in such species are usually absent or very rare and would seem to confer no advantage to the species. B.K. WEST, 36 Briar Road, Dartford, Kent.

THE SURREY RECORD OF TRIPLAX LACORDAIRII CROTCH (COL.: EROTYLIDAE).— This beetle is listed in the Victoria History list for Surrey (by Champion *et. al.*, 1902) but no further details are given as to captor etc. Furthermore, no authors since then appear to repeat the record, thus rendering it suspect. My own assumption is that the find of two examples by T. Wood in Dulwich (*Entomologist's mon. Mag.*, (1883-4) **20**: 191) gave rise to this listing, repeated (albeit as 'one example') in the third volume of Fowler, and supported by a specimen dated 1883 bearing the relevant data in the British Museum of Natural History. To my knowledge Dulwich is just within the vice-county of Surrey, and so I recommend that this area be added to those given in my previous article (*antea*: 273-274). The Berkshire record mentioned for instance in Joy's *Practical Handbook* of 1932 has long been agreed to be erroneous (cf. Donisthorpe, H. StJ., 1939, *Prel. List Col. Winds. For.*: 60). D.A. PRANCE, 23 Brunswick Road, Kingston Hill, Surrey KT2 6SB.

CYPHA LAEVIUSCULA MAN. (COL.: STAPHYLINIDAE) ON FAIR ISLE.— Among a number of beetles sent to me by Mr Edward Milner from pitfall traps on Fair Isle, Shetland (collected 1987), perhaps the most notable was a single male of the above. *C. laeviuscula* is uncommon or very local, the records suggesting that it is more common in the north, but one for Fair Isle may be of interest. The specimen was checked by the aedeagus. In this species the legs and antennae are practically black, a character it shares with *C. ovulum* Heer (of which, incidentally, authentic British records are a desideratum, as also of *seminulum* Er. whose male appears unknown). My remaining material of *laeviuscula* is from Penyghent, Mid-Yorkshire, at 2200 ft (W.O. Steel); Crianlarich, W. Perthshire, in sphagnum (G.H. Ashe); and Nethy Bridge, E. Inverness (P. Harwood). A.A. ALLEN, 49 Montcalm Road, London SE7.

THERA JUNIPERATA L. (LEP.: GEOMETRIDAE) IN N.W. KENT— A fine male of the southern form of this moth appeared at my garden m.v. light 26.x.1987; it was last reported from the area, at Wilmington, in 1904, and prior to that it was recorded by Stephens from the renowned Birchwood where in parts juniper abounded in the first part of the 19th century (J. Chalmers-Hunt, *The Butterflies and Moths of Kent,* **3**: 1981). Wild juniper (*Juniper communis*) is now a rare and declining plant with no regeneration in Kent (E. Philp, *Atlas of the Kent Flora,* 1982), and has long since disappeared from the dip slope of North Downs in N.W. Kent. This recent specimen of *juniperata* is perhaps a further indication that the insect is utilising cultivars commonly planted in gardens which sometimes involves a considerable change in habitat. B.K. WEST, 36 Briar Road, Dartford, Kent.

CURRENT LITERATURE

The Dragonflies of Europe by **R.R. Askew.** 294 pp including 31 colour plates; 502 text figures; 116 maps. 290 x 212 mm. Boards. Harley Books, 1988. £49.95.

This latest publication from the Harley Books stable follows the "house style" adopted for *The moths and butterflies of Great Britain and Ireland.* A foreword by Philip S. Corbet and a preface by the author lead to the main body of the work which comprises an introduction (3pp); chapters of life history (8pp); the adult dragonfly (11pp); the distribution of European dragonflies (5pp); morphology of the adult dragonfly (9pp); and a checklist of the European species of Odonata. The bulk of the work is the systematic section providing keys to families and species, supplemented by many line drawings depicting diagnostic features; families and genera are described, and the narrative supporting individual species includes synonymy, type locality, the English, French and German trivial names (where these exist), a description of the adult, its biology, flight period and distribution — the latter feature supported by a map. Keys are also provided for final-instar larvae of many European species — a much developed version of A.E. Gardner's well-known key to the British species. An extensive bibliography precedes the colour plates: 29 plates figure 210 specimens, each prepared by the author; A further two plates depicting live adults and specimen habitats appear elsewhere. An index concludes the work.

In his preface, the author states his aim is ". . . to simplify the identification of European dragonflies and thereby to promote interest in an intriguing order of insects . . .". The study of British dragonflies was considerably enhanced by the publication in 1977 of Cyril Hammond's excellent work, *The Dragonflies of Great Britain and Ireland,* and its second edition published in 1983 by Harley Books. Little else was readily available for the identification of European species until Collins made available, in 1986, an English translation of d'Aguilar's *A field guide to the dragonflies of Britain and North Africa* (reviewed in this journal **98**: 261). The work under review greatly extends and improves the coverage by d'Aguilar.

The colour plates sensibly use a constant magnification (x 2.7 for the damselflies and x 1.35 for the dragonflies), and are of high quality, both in execution and reproduction. The magnified inserts used by Hammond (*loc. cit.*) are not a feature of these plates, as diagnostic detail is incorporated in the line drawings. Colour illustrations are reasonably helpful for the identification of fresh specimens and suitable photographs, but dried or critical material present a different problem, and adequate keys and descriptions assume a crucial importance. The reviewer "field-tested" the keys on some dried material collected in arctic Norway some years ago: identification using the keys was hard work, but greatly assisted by the clear line drawings. The detailed

descriptions then enabled most specimens to be identified with a reasonable degree of certainly, although the reliance on certain colour patterns did present problems with the shrivelled material under test.

It would be wrong to give the impression that this is solely an identification manual — there is a wealth of information on biology and distribution of species. Some readers may question the value of coarse distribution maps covering the whole of Europe and North Africa, particularly when some of the species show such an apparently disjunct distribution. The author recognises the limitations of such maps, but rightly retains them within the text. Purists may also quibble at the position of some species and sub-species, but the author seems to have taken a pragmatic view on the status of difficult taxa, and thus no more than a few feathers should fly.

Cynthia Longfield rightly described Hammond's work as ". . . the dragonfly book of the century." The laws of priority (and plagiarism) do not permit further use of that description but, in the reviewer's opinion, this book stands head and shoulders above other works on the Odonata published to date, and is a tribute to the skill, industry and enthusiasm of the author. As we have come to expect, Harley Books have not compromised on the quality of design or production and the resultant work is a fine addition to any entomological library.

PAUL SOKOLOFF

Books received

Copies of the following books have been received, and will be reviewed in a future issue of the Record:

Beavis, I.C. 1988 *Insects and other invertebrates in classical antiquity.* University of Exeter. £40.00.

Forsythe, T.G., 1987. *Common ground beetles.* Naturalists' handbooks B. Richmond Pubishing Co. £5.95 (limp) £12.00 (boards).

Sawford, B., 1987. *The butterflies of Hertfordshire.* Castlemead. £15.00.

Warren, E.J.M. , 1988. *The country diary book of creating a butterfly garden.* Webb and Bower. £12.95.

Zakladnoi, G.A., 1987. *Stored-grain pests and their control.* A.A. Balkema. £22.50.

Correction

In a review published recently (*Ent. Rec.* **100**: 143), the title of the book under review was incorrectly cited as *A bibliography of the Zygaenidae* by W.G. Tremewan. The correct title is:
A bibliography of the Zygaeninae (Lepidoptera: Zygaenidae).
The editor apologises to the author and the publisher for this error.

TO OUR CONTRIBUTORS

ALL MATERIAL FOR THE TEXT of the magazine as well as books for review must be sent to the EDITOR at 4 Steep Close, Orpington, Kent BR6 6DS.

ADVERTISEMENTS, EXCHANGES and WANTS to P.J. JOHNSON, B.A., A.C.A., F.R.E.S., 31 Oakdene Road, Brockham, Betchworth, Surrey RH3 7JV. Specimen copies will be supplied on payment of £1.20 Sterling.

CHANGES OF ADDRESS to C. PENNEY, F.R.E.S., 109 Waveney Drive, Chelmsford, Essex CM1 5QA.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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THE HISTORY AND LOSS OF THE LEWES WAVE, *SCOPULA IMMORATA* L. (LEP.: GEOMETRIDAE)

By COLIN PRATT*

Scopula immorata has a fairly wide distribution in Europe but has only been unquestionably recorded from one area in Britain — the north-western section of the Vert Wood complex, near Laughton, East Sussex. The moth has a tragic history in this country and is now presumed extinct.

Several brief historical accounts of the Lewes Wave have been published (Barrett, 1902; Haggett, 1981; Pratt, 1981). The moth was first publicly taken on June 27th 1887 by C.H. Morris who captured two specimens, a male and a female, flying over "heathy ground". Morris took the specimens to the local authority on Lepidoptera, J.H.A. Jenner of Lewis, who initially thought they were examples of *Ematurga atomaria* L. Later, with the help of Messrs. Waterhouse and Kirby, the moths were correctly identified as *immorata* (Jenner, 1887). Within a few months it transpired that a Mr Hopley had almost certainly taken the species at Laughton previously, and that a specimen had lain unidentified within the collection of a Mr Desvignes for at least 30 years, possibly longer. Curiously, this specimen had been exhibited by S. Stephens at a meeting of the Entomological Society of London in 1868 as a variety of *Semiothisa clathrata* L. (South, 1939).

For many years the locality was kept a closely guarded secret, and, although Morris and others collected the moth every year, the species became uncreasingly numerous. Its heyday, at least after its public discovery, was between the two world wars when *immorata* was often a very common insect — in 1925 considerable numbers were reported — but this abundance was never subsequently equalled. The moth was last seen plentifully in 1940 but so irregular did sightings become after the Second World War had ended that the insect was sometimes thought extinct; nevertheless, at least five individuals were noted in 1953 and several were seen in 1954 and 1956 but only singletons were reported after that latter season. The last specimen of the Lewes Wave was seen, but not taken, by A.J. Wightman on June 22nd 1961.

Apparently never taken at light, specimens were seen during daylight, usually in afternoon sunshine, when they could be disturbed from heather and bracken. The moth was usually found from the second week of June until mid July, although it was occasionally taken in late May. Double-brooded on the continent, in this country *immorata* was only occasionally so with a partial second brood after advantageous weather during August and September; during the hot summer of 1906 F.C. Woodbridge bred 40 larvae outside, two of which fed up quickly to

5 View Road, Peacehaven, East Sussex.

yield adults in mid September (Woodbridge, 1906) and H. Worsley-Wood took or bred a specimen on October 10th 1913 (Richards collection, Haslemere Museum).

Some mystery surrounds the identity of the larval foodplant in this country as the early stages of *immorata* were never found in the wild. Some time ago in Europe larvae were discovered on thyme and marjoram, and reared on *Clary* spp., but none of these plants have ever been reported from Laughton's woods — an area botanically well-worked (Wolley-Dod, 1937; Hall, 1980).

Heather has often been quoted as the insects' foodplant here, following a categorical statement made at the time of its discovery by Jenner (Jenner, 1887); certainly the plant was always dominant wherever the moth flew — indeed, it was waist high in some parts — but larvae should have been discovered subsequently if this were the case. Larvae have been successfully reared in captivity on the ubiquitous knotgrass and plantain in this country and it is likely that in the wild "low plants" were eaten, as was suggested almost a century ago (Kirby, 1889), and recently confirmed from European experience (Skou, 1986).

It is not known why *immorata* only occurred at Vert Wood but it is thought to be "the ecological site complex rather than food" (Haggett, 1981). The area is situated on Weald Clay and Tunbridge Wells Sand and the insect flourished where these met; here the "sands provide a loose, dry soil given over largely to heath-land and conifers and, where there is an admixture of clay, a fertile loam soil is formed" (Wolley-Dod, 1937). There are a number of apparently similar heathy sites in Sussex but none suitable on an interface between these two soils.

Localities

Since its discovery, the moth was probably established in at least three places within the Vert Wood complex. The strongest colony, and the most well-known, was situated east of the Devil's Race where the Sussex Trust for Nature Conservation eventually established a reserve for the species — at TQ 510149. The Devil's Race was a section of ancient cattle track which laid between Halland House and Laughton Place and was so named after the nocturnal pursuit of a terrified medieval traveller by a red and flaming spectre (Pearson, 1931).

During the 1950s the insect was also seen flying over heather south of the reserve, both sides of the tarmac road leading south-westwards towards the Decca navigational radio beacon mast. An early but little known spot was an acre of heath probably situated in the southernmost part of the then remaining open area to the west of Sandpit Wood, at TQ 510142; this colony was lost when the land was first farmed at the end of the Second World War.

There is no satisfactory evidence that *immorata* ever occurred away from the Vert Wood complex within entomological historical times, although claims have been made. On about July 1st, 1908, R.E. James

was collecting moths in the Hailsham district and "was scouring the country on a bicycle in search of *Acidalia immorata*, which species I eventually discovered in rather small numbers. I think it quite possible that my locality may be a fresh one and not the recognised one (which I do not know), as I took them whilst trespassing on some private ground of sufficiently alluring aspect to tempt me inside. *Argynnis adippe* and belated *Brenthis selene* occurred on the same spot" (James, 1908). Apparently on the same day he visited Lewes. Of the two viable routes from Hailsham to Lewes the northernmost would bring a cyclist past the southern edge of Vert Wood; furthermore, the wood was the best in the county, at that time, for *adippe*.

In the mid 1920s A.J. Wightman categorically stated that "*immorata* is not confined in Britain to one spot, although it seems to be confined to a single district" (Wightman, 1924). In more recent times the species has been erroneously reported from Abbot's Wood (Haes, 1977) and there is also earlier coincidence with the area. In the A.E. Tonge collection housed in the Booth Museum of Natural History at Brighton there are 43 variable specimens of *immorata*. All are in perfect condition with one exception — a specimen labelled "Eastbourne 30/6/20" is badly chipped. Investigation has shown that the specimen was given to Tonge by E.P. Sharpe who lived at Eastbourne and rarely sortied far for his moths. Yet if this imperfect example came from the same locality as the 42 perfect accompanying specimens, why was it kept?

The Environment

The reason for the extinction of the Lewes Wave moth was the loss of suitable habitat — the causes being twofold; changes in centuries old woodland practises stopped the cycle which had kept heathy areas open and, even more important, almost all of its habitat was physically lost to forestry and agriculture. Laughton was first mentioned in the Domesday Book under Leston, a name derived from the words "lese" and "tun"; this lese near Ringmer was "a natural forest glade, which had for centuries been kept open by the constant grazing of wild cattle and other animals of the forest" (Pearson, 1931) and the tun a palisaded settlement, probably built by the Vikings, to keep out bears and wolves. It is known that some clearance of wood and heathland took place in the Laughton area between circa 650 and 800 AD, "by fire and axe" (Moore, 1965), but the land where *immorata* flew in historical times was to lay virtually unchanged for a thousand years. From 1086 until the end of the 18th century the Laughton area has been described as "a vast expanse of common waste, thickly wooded, no doubt, in the centre, but probably thinning out into heath or scrubby underwood" (*loc. cit.*). In the 13th century monks had the right to take wood for domestic fuel and hedges, timber for monastery repairs, and pasturage for 100 pigs; cattle also wandered the site keeping it in "an open unwooded condition by intensive grazing" (*loc. cit.*). Later, "the extensive park, abounding

with timber of the finest growth, was divested of its sylvan pride'' (Ellis, 1885) and ''provided everlasting supplies of charcoal'' (Pearson, 1931). In addition, iron clay was quarried, deer roamed the park, and for centuries bracken had been cut for livestock bedding. But when, by the first third of this century, most of these practises had fallen into disuse, scrub encroached on the remaining heath. ''Where, as on many southern commons, both burning and grazing have ceased, the ingress of scrub woodland is rapid'' (Edlin, 1956) and bracken, the foremost protagonist, ceased being gathered for bedding in most of Sussex in about the 1930s.

Although pictured flying in open meadows in Europe (Skou, 1986), before the Second World War in this country *immorata* was already confined to sunny glades containing grassy heath; the glades contained numerous low plants, low scrub, and were bounded by deciduous woodland. At the middle of this century the reserved area was bounded by dense thickets of blackthorn, hawthorn, brambles and gorse, on its southern and western edges, and oak and birch trees grew on the remaining aspects. Bracken increasingly became a problem, especially in the 1960s. During much of the following decade the reserve was, apart from a very few square feet, completely dominated by bracken — indeed, it was difficult to walk round the site.

Despite the potency of this change in environment, even more serious events had been reducing the total numbers of *immorata* since about 1800. On a map of Sussex published in 1795 by William Gardner and Thomas Gream the heathland north of Laughton village stretched from near Halland cross-roads in the north to Laughton Common in the south (map 1), some 850 acres. Whilst this establishes the potential size of the colony at that time the total numbers of the moth in flight can only be imagined. But by the time the Ordnance Survey of the area was published in 1813 almost 90% of the heath had been brought under cultivation (map 2). In another survey published in 1875, just before the public discovery of the moth, little had changed as regards the area of suitable habitat available — although there had been a change in the location of the main heath site (map 3). A few more acres were lost to farming before the turn of the century and just after but the position remained stable until the Second World War (map 4). Officially, permission was needed to collect at Vert from early times, although few people bothered, and even as early as 1927 some effort was being made to exclude collectors from the main colony. In a letter from the estate foreman of the day, Alan Stewart, to A. E. Tonge, granting permission to collect moths in the wood, ''the wired enclosure'' was excluded. Traces of the barbed wire can still be seen today, buried in the trunks of a line of beech trees bounding the footpath separating Rowland Wood from the more southerly woods.

In 1945/6 almost the entire area was ploughed and much of the heather destroyed; shortly afterwards conifers were planted and a

Map 1.

After Gardner and Gream, 1795.

Map 2.

After Ordnance Survey, 1813.

Scale 1 mile

Heathland and Scrub

Map 3.

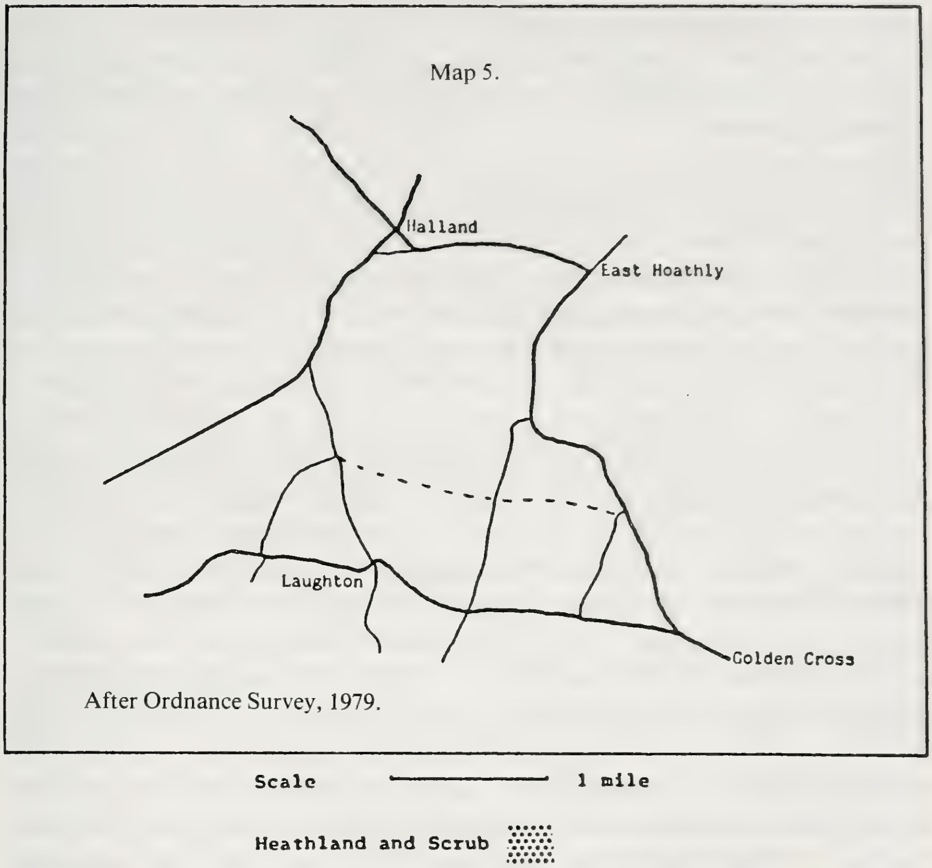
After Ordnance Survey, 1875.

Map 4.

After Ordnance Survey, 1961.

Scale 1 mile

Heathland and Scrub



directional radio-beacon mast erected. This devastation provoked both public and private responses; during the middle years of this century, to his great credit, B. Embry of Uckfield tried privately to clear encroaching scrub and bracken at the Devil's Race. In 1951 the moth became protected by the Committee for the Preservation of British Insects, under the auspices of the Royal Entomological Society; a year earlier the Race had been mooted as an area of special scientific interest and it became scheduled in 1953 by the forerunners of the Nature Conservancy Council. In early 1957, on behalf of the aforementioned committee, N.D. Riley thought that a two acre reserve would be sufficiently large to ensure the species' survival and five years later the two foremost lepidopterists living in the county, A.J. Wightman and G.M. Haggett, became involved in practical and political attempts to conserve the insect. It was suggested that the Sussex Trust for Nature Conservation take over the Devil's Race and designate the two acres a nature reserve; this was soon achieved through the patronage of the land owner.

For many years, probably centuries, *immorata* had been restricted to the warmth of sheltered glades but in 1959 most of the overgrown reserve was opened to all four winds, and worse, when surrounding cover was felled and the land levelled by bull-dozer. The reserve suffered

much incidental damage. Visiting at the time, R. Fairclough searched for the moth and wrote that he was "horrified" by the scene and was "sure this is the end of it" (Fairclough, 1961) — and he was right, it was the *coup de grace*.

Excluding the reserved two acres, conifers were then planted throughout. In 1964, paying £250 for the privilege, the Trust was granted permission for a further three acres of adjoining conifer-planted land to be added to the reserve and the resultant total of around five acres has been held since (map 5). In the mid 1960s the Trust removed all the conifers and commenced scrub and bracken clearance operations. Reports of a fire on the site in about 1967 lie unconfirmed by residents.

For many years Vert Wood was owned by the Chichester Estate company, their agents being Strutt, Parker, Loft & Warner of Lewes. At the end of the Second World War the land was sold off in small plots for around £20 an acre — the Devil's Race area being bought by the Thorley family — and was after managed by the high profile firm of Fountain Forestry of Somerset until its recent resale. Most, but not all, concerned were sympathetic to the insects' conservation, although at a price, at a time when conservation was less fashionable. The Sussex Trust for Nature Conservation has spent much hard earned money on the site and its volunteers worked hard, unsuccessfully, to re-establish ancient heath to provide any surviving moths with a suitable environment. No doubt, to survive, *immorata* had always colonised freshly available heathy spots at Vert Wood, as older areas became shaded, but in the end there was just no suitable heath left. A few very small areas of a suitable character do still become apparent in the district from time to time but the herbicide "Roundup" has been extensively used since the early 1980s.

In summary, despite efforts by private individuals, leading lepidopterists, the county naturalists trust, the Committee for the Preservation of British Insects, and the Nature Conservancy Council, *immorata* became extinct through the loss of suitable habitat. It is clear that although heath had been lost to agriculture for many years, the critical act was the Second World War ploughing from which the insect never recovered. It may be that a more assertive stance by the Sussex Trust for Nature Conservation to gain better co-operation from the "foresters", using adverse publicity if necessary, could have saved *immorata*: we will never know. Arguably, the Lewes Wave could have been rescued from extinction until the 1950's but conservation efforts were too little, too late.

Acknowledgements

My thanks are due to Dr J.V. Banner, R. Fairclough, G.M. Haggett, the Lewes division of the Nature Conservancy Council, Mr J. Pratt of Decca Navigation, and Mr B. Skinner, for their information on *S. immorata* and its habitat.

References

Barratt, C.G., 1902. *Lepidoptera of the British Islands,* **8**. London.

Edlin, H.L., 1956. *Trees, Woods & Man.* Collins, London.

Ellis, W.S., 1885. *The Parks and Forests of Sussex.* Wolff, Lewes.

Fairclough, R., 1961. Collecting Lepidoptera in 1960. *Entomologist's Rec. J. Var.,* **73**:11-17.

Gardner, W. & Gream, T., 1795. Map of Sussex. *In:* Margary, H., (ed.), 1970. *Two Hundred and Fifty Years of Map-making in the County of Sussex,* Margary & Phillimore, Chichester.

Haes, E.C.M., 1977. *Natural History of Sussex.* Flare Books, Hassocks.

Haggett, G.M., 1981. *Larvae of the British Lepidoptera not figured by Buckler.* British Entomological & Natural History Society, London.

Hall, P.C., 1980. *Sussex Plant Atlas.* Borough of Brighton. Booth Museum of Natural History.

James, R.E., 1908. Entomological Notes from the Hailsham district — The Aurora Borealis and Treacle. *Entomologist's Rec. J. Var.,* **20**: 227-228.

Jenner, J.H.A., 1887. *Acidalia immorata,* L. A species New to Britain. *Entomologist,* **20**: 289-290.

Kirby, W.F., 1889. *European Butterflies and Moths.* Cassell, London.

Moore, J.S., 1965. *Laughton.* Occasional Paper No. 19, Leicester University Press.

Pearson, W.A., 1931. *The Village of the Buckle. (Laughton).* Courier Printing, Tunbridge Wells.

Pratt, C.R., 1981. *A History of the Butterflies and Moths of Sussex.* Borough of Brighton, Booth Museum of Natural History.

Skou, P., 1986. *The Geometroid Moths of North Europe.* Brill, Copenhagen.

South, R., 1939. *The Moths of the British Isles,* **2**. Warne, London.

Wightman, A.J., 1924. Letter to the Editor. *Entomologist,* **57**: 279-281.

Wolley-Dod, A.H., 1937. *Flora of Sussex.* Saville, Hastings.

Woodbridge, F.C., 1906. *Acidalia immorata. Entomologist,* **39**: 231-232.

A LONG WAY FROM HOME.— It may be of interest to record that at 1350 hours on Thursday the 30th of June 1988, whilst *en route* from Fort Lauderdale, Florida, to Bermuda on board a 55 foot yacht, a fresh specimen of the American painted lady butterfly, *Cynthia virginiensis* Drury, was seen flying strongly around the boat. It rested for 2-3 minutes on a spinnaker pole on the deck before continuing to fly, settling briefly on other parts of the boat. Unfortunately none of the crew saw from which direction it arrived, nor whence it eventually departed. The precise location was 28 degrees 44.97 minutes North, 75 degrees 41.46 minutes West which is about 250 miles east of Cape Canaveral and 145 miles north east of the Abaco Islands. I do not know whether the species is resident on the Abaco Islands, the nearest land. It was a very hot day with hardly a breath of wind; what little breeze there was was coming from the Atlantic. W.J. TENNENT, 1 Middlewood Close, Fylingthorpe, Whitby, North Yorkshire.

A REAL MENACE TO BUTTERFLIES: THE GARDENING CORRESPONDENT

By Brian O.C. Gardiner*

"Butterflies and Moths, however pretty, are the worst enemies one can have in a garden; a single insect of this kind may deposit eggs enough to overrun a tree with caterpillars, therefore they should be destroyed at any cost of trouble. The only moth that you must spare is the common black and red one; the grubs of this feed exclusively on groundsel, and are therefore a valuable ally of the gardener."

"All those attractive butterflies you admired earlier in the month will have smothered all your vegetables with their eggs. Now is the time to spray them liberally with insecticide . . ."

I feel it is high time that the gardening correspondents who write in the columns of our daily, weekly and monthly press are taken to task and educated in conservation. The two paragraphs above were written in 1849 and 1985 respectively, in a gardening column, and show that the same dreadful attitude of such writers has not changed over 136 years! We are told to kill this caterpillar, destroy that bug, eradicate those earwigs; hoe regularly, cut down that thistle, root out those weeds. That is to say constantly destroy the foodplants of the larvae of those butterflies we so much admire. If a weed is by definition, a plant in the "wrong" place then all the wheat now growing on the bed of the former Whittlesea Mere is a weed and should be destroyed, not heavily subsidised by the CAP, for it is in the "wrong" place, the true inhabitants of this area being naturally reeds, rushes, flags, water lilies and their accompanying fauna of dragonflies, large copper butterflies etc.

So when our gardening correspondent mentions weeds what he really means is the natural vegetation, the food of the larvae of our butterflies and moths and other delightful insects. In other words some plant we have not obtained from a seed merchant or garden centre and planted ourselves. While I have noticed that the planting of flowers to attract adult butterflies is sometimes recommended, with a few exceptions, they then go on to recommend the destruction of the same butterflies' *larval* foods. Some indeed also seem very ignorant as to what these foodplants may be.

A particularly appalling piece of mis-directed destructiveness and mis-information appeared in *The Guardian* on June 29th some two years ago, under the title of "Arrest that Pest." I quote:—

*2 Highfield Avenue, Cambridge CB4 2AL

"Natural predators help to control pests but rarely at levels to satisfy gardeners. When it comes to le crunch, we don't enjoy munching through maggot-ridden apples.

Chemicals represent a convenient and effective tool for trouble-shooters prepared to use them safely and correctly . . .

Potions for creepy-crawlies are numerous . . . Countless materials are sold for controlling lowly invertebrate crunchers, suckers and crawlers."

The article goes on to list numerous highly poisonous and dangerous killing agents.

In these days of "Butterfly Years," "Project Papillon," "Friends of the Earth," "Naturalists Trusts" and the Conservation movement generally, I find the attitude presented by the above quotations quite appalling as well as being against the general body of opinion today. How many gardeners in any case are dissatisfied with natural control? In this day and age it is only in occasional years that we really seem to have any pest outbreaks anyway and sometimes these are of quite rare species such as the brown-tail moth! True, our roses may sometimes have their blooms suppressed due to greenfly, but it is my experience that this suddenly clears up and we are subjected to the enjoyment of a delightful display of colourful ladybirds.

Now there is a small plot of land in Cambridge which, deliberately, has been left untouched with any insecticide, but which has been cultivated for at least half a century. For much of this time I have known it. Full of insects of all sorts, a source of much pleasure and very useful for teaching purposes. In all the time I have known it and, I have been informed, before then, there has never been a serious outbreak of any one species such as to be considered a pest and cause annoyance or inconvenience. In other words the natural balance so derogated by our gardening correspondent above has been functioning perfectly, as it should, and does, unless disrupted by the application of insecticides. Do we really all want a sterile wilderness devoid of all but so-called "proper" plant-life as recommended by such correspondents? This is totally un-natural.

I should like to query also his point about "we don't enjoy munching through maggot-ridden apples." Has he ever, I wonder, tried one? Compared the flavour with the pap from the supermarket? Now the same Cambridge plot contains about an acre of orchard and its apples are the most delicious my family and friends have come across in many a long day. Uneven in size, some scabbed, some with maggots (Codling moth larvae) (which in any case are always to be found in the uneaten core!) and in most years giving a very good crop. When it comes to taste and flavour they beat supermarket products and all but specialist greengrocers hands down. Nor of course are they covered in a sublethal "safe" dose of residual poison (which official statistics admit is present on over 60% of our fruit and vegetables) and neither do they retain

residues of preservative wax or methyl bromide fumes which are so often present on shop stored apples. In spite of this lack of such "protective cover" they mostly also keep very well indeed!

I do feel that the slant of many gardening articles is on the whole inimical to the well-being of our butterflies, not to mention other insects, and it is perhaps time (all praise to Clive Farrell's *Butterfly News* in this respect) that some counter-propaganda is mounted and it would be helpful if, when entomologists see such adverse comments against butterflies in their local press, they were to write a confutation to the editor. In the end, if enough of us did this, the message might get through.

NOLA CONFUSALIS (HERRICH-SCHÄFFER) (LEP.: NOCTUIDAE), THE LEAST BLACK ARCHES, IN ESSEX— It would seem possibly worth placing on record my recent discovery of a colony of *Nola confusalis* (H.-S.) in Wall Wood, North Essex, one of the satellite woodlands forming a part of the Hatfield Forest complex and owned by the National Trust. On the evening of 11th May 1988, around half a dozen fairly fresh specimens were attracted to one of the three lights I was running there in the company of members of the Bishop's Stortford Natural History Society. Regrettably, all were of the typical form, and so Epping Forest — a mere nineteen kilometres to the south-west — remains the only known locality for the grey ab. *columbina* Image. The only previous record for Hatfield Forest would seem to be that made by Mr Geoffrey Dent in 1945 and reported in *Trans. Bishop's Stortford and district nat. Hist. soc.* **1**(1) published in 1950. This is repeated in the Essex Naturalists' Trust's 1975 publication *A guide to the Butterflies and Larger Moths of Essex* as being made in 1949. Elsewhere in Essex, Epping Forest remains the stronghold of this species where, at least in my experience, ab. *columbina* outnumbers the typical form by about two to one. The only other known colony of this small insect in the county is at an Essex Naturalists' Trust woodland reserve near Bradwell-on-Sea, though there have been sightings of individuals at Saffron Walden, Layer-de-la-Haye and St Osyth and there are pre-1960 records from Colchester, Benfleet and Hadleigh. I have no records at all for the adjacent areas of northern Hertfordshire, and the species is absent from Foster's 1937 *A list of the Lepidoptera of Hertfordshire (Trans. Herts. nat. Hist. soc. Fld. Club* **20**(4): 157-279.)

As a concluding comment it may be more than coincidence that I captured the Wall Wood moths at around 2300 hours British summertime, which is almost exactly the same time that I have always captured the same species on my various trips to Epping Forest. I am grateful to Mr L. Sisitka, the National Trust's Head Ranger for Hatfield Forest for permission to record insects in that area. COLIN W. PLANT, Passmore Edwards Museum, Romford Road, Stratford, London E15 4LY.

CORNISH NAMES FOR MOTHS

By Adrian Spalding and Loveday Jenkin,*

On the weekend of 21/22 August, the organisation for Cornish language for children called Dalleth (which means "beginning" in Cornish) arranged a camp for children at An Gresen Gernewek, Cusgarne, Truro, which is run by Loveday Jenkin. One of the activities arranged for their education was a moth trapping evening led by Adrian Spalding. The m.v. light was set up on a sheet in the corner of a field, near a hedge of sycamore, but gardens nearby provided a more diverse habitat with elder, dead elms, thistles, nettles, brambles, heather etc. As the moths came in, we attempted to give Cornish names to them, in most cases a literal translation from the English, thus elephant hawk-moth would be Hok-olyfans. In Cornish, the adjective comes after the noun, thus we get Tyger Ruby. We only caught one moth without an English name (*Agriphila tristella* D. & S.), but in fact H.N. Humphreys and J.O. Westood in their *British Moths and their Transformations* (1843-1845) called it the dusky yellow veneer, the name we use here. No rare moths were found.

The name small phoenix posed a problem. Most English moth names are descriptive, but the meaning of the English name here is rather fanciful. R.D. Macleod in his *Key to the names of British Butterflies and Moths* suggests that "Phoenix" is used because of the resemblance of the band on the forewings to smoking fire. The Latin name *Ecliptopera silaceata* comes from the words *eclipes* meaning deficient and *peras* meaning tip (from the blunt tip of the forewings), and from *silaceus* meaning ochre-like (from the colour of the forewings). However, we decided that the most distinctive feature was the shape of the broken median bar on the forewing, and so we gave the name Kelgh Callen to the small phoenix (meaning the vein of iron ochre in the shape of a circle). It is of interest to note that in the *British Butterfly Conservation Society News* No 38, there is a list of Welsh names for butterflies, sent in by Mrs Lynne Harrison. In it, most of the Welsh names are literal translations from the English, although some are not, such as painted lady (Iar Fach Dramor meaning butterfly from across the sea).

As far as we are aware, there are no records of Cornish names for moths or butterflies, (although there are for birds, plants, animals and fish). The dialect word "piskey" was used to signify small white night-flying moths (perhaps embodying the spirits of the dead). The last known native Cornish speaker, for whom Cornish was the first language, was Dolly Pentreath, who died in 1777, but Cornish survived in texts and literature and probably the spoken word. It is now spoken by many people in Cornwall and throughout the world, with many children brought up to speak it in their home.

*Tregarne, Cusgarne, Truro.

Tykky-dew nos (butterfly of the night) — an illustrative list

Pyralidae		
1305	dusky yellow veneer	Launyans Melen Godewl
1405	mother of pearl	Crogen Perl
1413	gold triangle	Tryhorn Owr
Lasiocampidae		
1640	drinker	Sughaner
Geometridae		
1689	mullein wave	Ton Molen
1728	garden carpet	Lurlen an Lowarth
1777	July highflyer	Ughel-nyja Gortheren
1759	small phoenix	Kelgh Callen
1846	narrow-winged pug	Coryk Askel Yn
1858	the v-pug	Coryk-V-
1906	brimestone moth	An Loskven
1937	willow beauty	Tekter Helygen
Lymantriidae		
2033	black arches	Gwaregow Du
Arctiidae		
2050	common footman	Paja Kemyn
2064	ruby tiger	Tyger Ruby
Noctuidae		
2102	flame shoulder	Scoth Flam
2107	large yellow underwing	Ys-askel Melen Mur an vrassa
2109	lesser yellow underwing	Ys-askel Melen Byghanna
2111	lesser broad-bordered yellow underwing	Ys-askel Melen Myn Ledan Byghanna
2123	small square-spot	Bythen Carrek Byghan
2321	dark arches	Gwaregow Tewl
2342	rosy minor	Myjyn Lyw Ros
2343	common rustic	Tythyak Kemyn
2353	flounced rustic	Tythyak Cryghyllys
2441	silver y	Y Arghans
2450	the spectacle	Spectaclys
2474	straw dot	Nam Cala
2477	the snout	Tronek

The order and numbers are taken from *A Recorder's Log Book and Label List of British Butterflies and Moths* by J.D. Bradley and D.S. Fletcher.

References

Harrison, L., 1987. Welsh Names for British Butterflies, *British Butterfly Conservation Society News* No. 38:26-28.

Humphreys, H.N. & Westwood, J.O., 1843. *British Moths and Their Transformations,* William Smith, London.

Macleod, R.D., 1959. *Key to the names of British Butterflies and Moths,* Issac Pitman & Sons, London.

TRIMIUM BREVICORNE REICH. (COL.: PSELAPHIDAE) REDISCOVERED IN YORKSHIRE

By K.N.A. ALEXANDER *

A single specimen of this very rare beetle was found beneath a loose rock in the coastal undercliffs of The Coomb, Ravenscar, N.E.Yorks (NZ 984019) on 27.vii.1987. This species was last recorded in Yorkshire in 1901 by E.G. Bayford — "one, probably under bark, near Doncaster, in a locality now built over" (Pearce, 1957). There are earlier records from the County: "Scarborough, in some numbers on North Cliff in moss" (T. Wilkinson and R. Lawson, in Walsh and Rimington, 1956), and also "Bishop's Wood" by E.A. Waterhouse (Pearce, 1957), presumably the Bishop Wood near Selby.

Outside of Yorkshire Fowler (1889) lists Norfolk, Suffolk and Lincolnshire, and Fowler and Donisthorpe (1913) add Chiddingfold, Surrey, and Cobham Park, Kent. The only other record since then, to my knowledge is that of R.A. Crowson (in Welch & Harding, 1974). Dr Crowson has told me that his was a single specimen, collected on April 12th 1960, extracted by Tullgren funnel from a sample of rather deep oak litter. He further commented that the Continental records indicate a considerable variety of habitats including associations with ants. The rock under which my specimen was found lay within sparse, acidic grass heath vegetation on a stable scree slope beneath high sandstone cliffs. The locality has a good variety of ants present, including *Leptothorax acervorum* F., *Myrmica ruginodis* Nyl. and *Formica lemani* Bondri., although none of these were beneath the rock in question.

A whole specimen is illustrated by Pearce, but the detail of the strikingly unusual antennae is not shown. Mr D.K. Clements has very kindly provided drawings of the head and antenna (figure 1) together with the same for *Euplectus kirbyi* Denny (figure 2) for comparison.

Acknowledgements

I am grateful to Mr C. Johnson for confirming the identity of this beetle, and Mr D.K. Clements for drawing the figures, and Mr A.A. Allen for his helpful comments.

References

Fowler, W.W. 1889. *The Coleoptera of the British Isles*. **3**:99. London.
Fowler, W.W. and Donisthorpe, H. St.J. 1913 *ibid*. **6**:251.
Pearce, E.J. 1957. *Handbk. Ident. Br. Insects*. Coleoptera: Pselaphidae. **4**(9):12.
Welch, R.C. & Harding, P.T. 1974. *Suffolk Natural History*. **16**:287-304.

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Walsh, G.B. and Rimington, F.C. 1956. in *The Natural History of Scarborough District*. Scarborough Field Naturalist's Society.

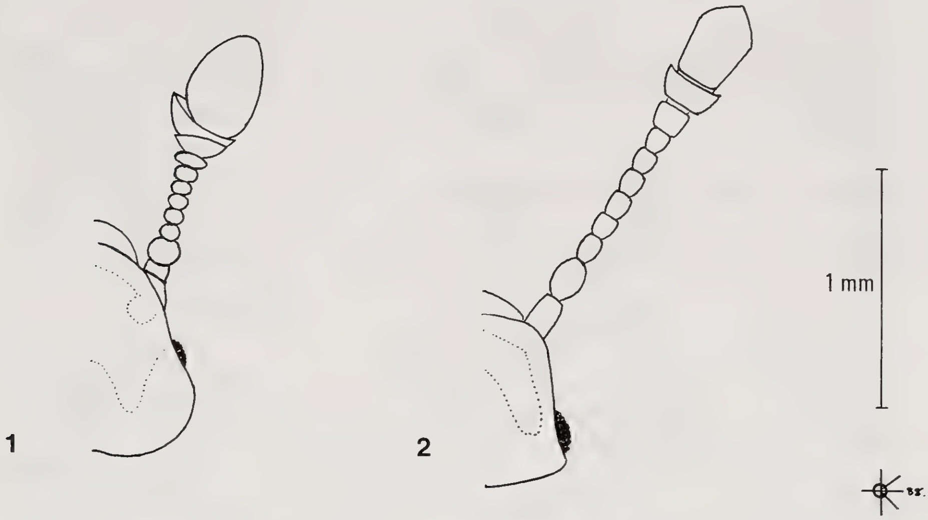

Fig.1. *Trimium brevicorne*: head with antenna, dorsal view.
Fig.2. *Euplectus kirbyi*: head with antenna, dorsal view.

[Unless the record 'Bishop's Wood' is known to relate to Yorkshire, I am of the opinion that it must be referred to the locality of that name near Highgate and Hampstead, Middlesex: this would have been a likely place for E.A. Waterhouse, as a London-based entomologist, to visit. J.F. Stephens had already recorded the species from the metropolitan district, besides Norfolk, Suffolk, and Lincs. Dr Crowson's 1960 capture was at Staverton Park, near Woodbridge. Wilkinson and Lawson, it might be added, were noted for their discovery of a whole series of rare beetles in the Scarborough district during the previous century, of which *T. brevicorne* is one; this is the source of most specimens in our collections. Leaving out of account the ancient London records(s), the species seems confined to the eastern strip of the country from Kent to Yorks, in which the only county so far without a record is Essex. — A.A.A.]

MESAPAMEA SPECIES (LEP.: NOCTUIDAE) IN SHROPSHIRE IN 1986

By A.M. Riley & J.E. Southwood*

Mesapamea didyma Esp. (= *secalella* Remm) and *M. secalis* L. are two closely allied species of noctuid moth which are at present considered indistinguishable by superficial characters.They have only recently been separated (Remm, 1983) and their nomenclature revised (Lempke, 1988); up to 1985 only *secalis* was thought to occur in Britain. Since then genitalia examination has shown both *secalis* and *didyma* to be present in approximately equal numbers in many localities throughout the British Isles (Skinner, 1984 and pers. comm.).

As part of a current review of the Lepidoptera of Shropshire the presence and relative proportions of *M. didyma* and *M. secalis* were studied by examining the genitalia from a complete year's sample of *Mesapamea* spp. from the Rothamsted Insect Survey light trap at Preston Montford Field Centre (Site no. 382, OS grid SJ 433 143). The criteria for separation established by Jordan (1986) were used.

A total of 97 individuals were examined, seven of which were *didyma*. This represents approximately 7% of the catch and is the first record of this species for Shropshire.The results are tabulated below:

	July			August																	Sep.	
	25	29	31	6	8	10	11	12	13	15	16	17	18	19	21	22	23	25	27	28	12	total
didyma males	1	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	5
females	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
secalis males	1	2	1	1	1	2	2	0	2	2	3	12	4	1	5	2	0	0	0	1	0	42
females	1	0	2	1	2	1	0	2	3	2	2	11	3	3	7	2	1	0	1	3	1	48

The small proportion of *didyma* in the sample prevents detailed comment on the phenology of this species. However, it is apparent that the adults are present throughout the flight period of *secalis*.

There were no superficial characters which could be used to separate the two species. This supports the views of Skinner (1984) and Agassiz (1986).

Having established the presence of *didyma* in Shropshire further studies are required of future catches at Preston Montford and at other localities to determine its abundance and distribution within the County.

Acknowledgements

Our thanks are extended to Mr A. Bayley and his staff for operating the trap at Preston Montford Field centre and to Mr B. Skinner for his comments on the known distribution of *M. didyma*.

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References

Agassiz, D.J.L., 1986. Some practical hints for treating *Mesapamea* species. *Entomologist's Rec. J. Var.* **98**:45-46

Jordan, M.J.R., 1986. The genitalia of the species pair *Mesapamea secalis* L. and *Mesapamea secalella* Remm (Lep.: Noctuidae). *Entomologist's Rec. J. Var.* **98**:41-44

Lempke, B.J., 1988. *Mesapamea secalella* Remm — a junior synonym of *Mesapamea didyma* Esper (Lep.: Noctuidae). *Entomologist's Rec. J. Var.* **100**:147-152

Remm, H., 1983. New species of Noctuidae (Lepidoptera) from the U.S.S.R. *Ent. Obozr.* **62**:596-600

Skinner, B., 1984. *Colour identification guide to the moths of the British Isles.* Viking.

BOOK TALK 10.— Problems facing those who rear lepidoptera can sometimes be solved by reference to a good practical guide. Thus, one of the most useful handbooks ever written for the macrolepidopterist, and still serviceable after 75 years, is L.W. Newman and H.A. Leeds, *Text Book of British Butterflies and Moths* (St Albans, 1913). Besides furnishing one with an abundance of valuable tips, this book is perhaps unique in that with virtually every species is given the manner of pupation. Take for instance *Acronycta alni* (Alder) on page 32, under the "Food-plants and Rearing Hints" column, is this worthy wrinkle: ". . . . food-plant [species] first used must not be changed throughout, larva devours cast skin at each moult or will die; requires dead wood or virgin cork for pupation, earth is useless."

A curious little item is the first edition of Edmund Sandars, *A Butterfly Book for the Pocket,* published in 1939 by Oxford University Press.This has unusual silver metallic printing for the appropriate markings of the wings of the fritillaries, as well as for those of the wings of some other butterflies. It is also the first book to use distribution maps for each butterfly species.

Annotated copies are often interesting, especially if the writer is one with considerable experience of the subject. My copy of J.F. Stephens' *List of the Specimens of British Animals in the Collection of the British Museum Pt. V — Lepidoptera* (1850), formerly belonged to Octavius Pickard-Cambridge (1828-1917), the celebrated arachnologist, lepidopterist and all round naturalist. It is interleaved and contains numerous annotations by him.

Previous Book Talks appeared in the *Record* as hereunder: (1) **90**: 186, 1978. (2) **91**: 280, 1979. (3) **92**: 289, 1980. (4) **93**: 231, 1981. (5) **94**: 121, 1982. (6) **95**: 247, 1983. (7) **96**: 272, 1984. (8) **98**: 210-211, 1986. (9) **99**: 232, 1987. J.M. CHALMERS-HUNT. 1 Hardcourts Close, West Wickham, Kent.

ELPHINSTONIA CHARLONIA (LEP.: PIERIDAE) AND *POLYOMMATUS ICARUS* (LEP.: LYCAENIDAE) ON LANZAROTE

By Denis F. Owen*

The greenish black-tip, *Elphinstonia charlonia charlonia* Donzel, is found in semi-desert and rocky areas in Morocco, Algeria and Tunisia and also on the Canary Islands of Tenerife, Fuerteventura and Lanzarote where it is described as "very local" and the larval food-plant "not known" (Higgins and Riley 1983). A separate, isolated and well-differentiated subspecies, *E. charlonia penia* Freyer, occurs in south-east Jugoslavia, Bulgaria and northern Greece where the larval food-plant is given as *Mathiola tessala* (Cruciferae) (Higgins and Riley 1983)

There appear to be very few recent records of *E. charlonia* from the Canary Islands. In February 1988 I found the butterfly at well-scattered localities throughout the island of Lanzarote. All were freshly emerged and were actively flying in rocky, semi-desert areas where earlier exceptionally good winter rains had brought on a profusion of flowers. At one site, just south of the town of Tinajo, the males were flying round and round the top of a small rocky hill and a female was seen laying eggs on a mignonette, *Reseda crystallina* (Resedaceae). *R. crystallina* is confined to Gran Canaria, Fuerteventura and Lanzarote (Bramwell and Bramwell 1974). On Lanzarote it is widespread and common and in February 1988 it was in full flower. My observation constitutes a new food-plant record for *E. charlonia.*

Another Canary Island endemic, *Reseda scoparia,* is confined to La Gomera, Gran Canaria and Tenerife, and if *E. charlonia* is still found on Tenerife (I know of no recent records) this mignonette is the likely larval food-plant, although the situation is perhaps complicated by the presence on many of the Canary Islands of *Reseda lutea* and *Reseda luteola,* both introduced from Europe, and *Oligomeris subulata* from North Africa (Bramwell and Bramwell 1974).

The status of the common blue, *Polyommatus icarus* Rottemburg, on the Canary Islands has for long been uncertain. Higgins and Riley (1983) simply give "Canary Islands", Guichard (1967) gives Lanzarote and Fuerteventura, while Jones et al. (1987) list all islands, but provide no evidence, and I suspect they simply take the statement by Higgins and Riley (1983) to mean all islands. So far as I know, there are no recent records from the western Canaries and I doubt if the species has ever occurred on them.

In February 1988 I found *P. icarus* locally abundant on Lanzarote, especially where great carpets of *Lotus* spp. (Leguminosae) were in full flower. The best site was on top of the cliffs at Mirador del Rio where in an area of some 250 m^2 there were dozens of individuals, including

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mated pairs. Females were frequently seen laying on *Lotus* spp., once or twice positively identified as *Lotus lancerottensis,* a species confined to Lanzarote and Fuerteventura (Bramwell and Bramwell 1974), and also on what might be another *Lotus,* possibly an introduced species, but possibly an exceptionally vigorous growth of *L. lancerottensis.*

P. icarus thus seems well-established on Lanzarote. In May 1987 I failed to find it on Fuerteventura, but the island was dry and desiccated and no butterflies of any species were seen. Indeed it is likely that on the two desert islands of Fuerteventura and Lanzarote all butterflies are active chiefly in February and March, especially if there has been biologically effective rainfall.

References

Bramwell, D. and Bramwell, Z. 1974. *Wild flowers of the Canary Isles.* Thornes, Cheltenham.

Higgins, L.G. and Riley, N.D. 1983. *A field guide to the butterflies of Britain and Europe.* Collins, London.

Guichard, K.M. 1967. Butterflies of the Canary Islands. *Entomologist* **100**: 293-299.

Jones, M.J., Lace, L.A., Housome, M.V. and Hamer, K. 1987. The butterflies and birds of Madeira and La Gomera: taxon cycles and human influence. *Biol. J. Linn. Soc.* **31**: 95-111.

MOROCCO REVISITED — A CORRECTION.— In my article 'Morocco revisited in 1986' (*Entomologist's Rec. J. Var.* **100**:34) I recorded taking a specimen of *Pseudophilotes bavius fatma* Oberthur atop a small hill in the High Atlas mountains south of the Tizi-n-Test in Morocco. On re-examination I find this specimen is actually a small and unusually marked female *Lysandra punctifera* Oberthur. My thanks to Herr H.J. Falkenhahn of Kulmbach, West Germany for pointing out this mis-identification and causing me to re-examine the butterfly — a little more carefully! W.J. TENNENT, 1 Middlewood Close, Fylingthorpe, Whitby, North Yorkshire.

SILVER-WASHED FRITILLARY IN SURREY.— my son, Nicholas, reported to me that he had sighted a single example of *Argynnis paphia* L., the silver-washed fritillary, an insect he has often seen before, in Richmond Park, Surrey on 24th July 1988.

According to Plant, (1987) *The butterflies of the London area,* the butterfly has not been recorded from Richmond Park since 1953, although there may be later records of which I am unaware. D.S. BURROWS, Witham Cottage, School Lane, Boothby, Pagnell, Lincs.

AN ARTIFICIAL DIET FOR MAINTAINING LADYBIRDS

By S.A. Henderson and J.S.M. Albrecht*

Introduction

Considerable interest has been shown in ladybirds over the past twenty-five years or so, due to their potential economic use for the biological control of agricultural pests such as Aphids and Coccids. However, one of the main problems associated with the study of ladybirds in the laboratory throughout the year, and the rearing of large numbers of individuals for biological control, is the provision of sufficient food. This, at its most basic, would involve the mass rearing of the prey species on a suitable host plant. This technique, however, suffers from the disadvantages that (i) the rearing of the prey species in large numbers is wasteful of space, labour and, in consequence, money, (ii) failure of the prey population due to disease or accident could lead to partial or complete loss of the ladybird population.

To cope with these problems, several workers have attempted to develop alternative foods, either to replace live food, or to supplement it when required (Smirnoff, 1958; Smith, 1965 a, b, c; Bain et al, 1984). There have been basically two main approached to the preparation of artificial foods: (a) to preserve, by freezing or drying, the natural prey, or a substitute species, which may then be fed, either alone, or mixed with other ingredients, (b) to prepare a totally artificial diet without the use of live food. Experience has usually shown that, while ladybirds can be kept alive for long periods of time on artificial foods, they usually require some substance(s) only found in live food to breed successfully.

In Cambridge, we have been carrying out chromosome studies of population samples of several ladybird species. This work has been carried out in association with Drs M. Majerus and P. Kearns, who have been involved in a nationwide ladybird survey. This has often necessitated keeping ladybirds alive in the laboratory for long periods of time and attempting to breed them. Our main concern was to be able to keep adult ladybirds, of as many different species as possible, alive in the complete absence of their normal diets.

The diet published by Smirnoff (1958) appears to be an excellent recipe for maintaining ladybirds alive for long periods, but suffers from two drawbacks: (i) it uses large amounts of dried and powdered insects, which are the normal prey food of the species to be reared. These may not be readily available, or even known in some cases, (ii) it also uses large amounts of Royal Jelly. This is normally available from beekeepers only once a year, when hives are dismantled. Its current popularity as a health food makes commercial purchase of large amounts decidedly uneconomic. In 1965 Smith experimented with a

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series of artificial diets for maintaining the adults and larvae of ladybirds. Some of these involved dried, powdered aphids, others involved pollen, or other foodstuffs, quite unrelated to their normal diets, such as brewers yeast, or dessicated liver, without the use of any aphid additives.

We attempted to feed our ladybirds with Smith's dried, powdered mixture of liver, yeast and sucrose, but they did not find the powdered food acceptable. An agar-based food of the type developed by Smirnoff seemed a much more suitable food substitute and an attempt was made to develop a new artificial food combining the merits of the recipes of Smith and Smirnoff. Using a new ratio of quantities arrived at largely by intuition, the combination of dried liver, yeast, sucrose and vitamins recommended by Smith was combined with an agar jelly of the type used by Smirnoff. The honey used in Smirnoff's recipe was replaced by Maple syrup simply because we were interested in rearing species which were arboreal and had been collected from aphid-infested field maple and sycamore trees as well as their normal coniferous trees. The resulting foodstuff proved to be a complete success from the start and, apart from the addition of a small amount of the fungicide Nipagin to retard mould growth, has been used unchanged for the past three years.

Materials and Methods

(A) Ingredients

9g LIVER (Dried, powdered, dessicated OXOID or DIFCO)
6g YEAST (Dried, powdered)
15g SUCROSE (Domestic sugar satisfactory)
2g AGAR (powdered)
2 MULTIPLE VITAMIN PILLS (Crushed: e.g. BOOTS)
10ml. MAPLE SYRUP (pure)
150 ml. Water (Distilled)

Optional Extra: 1-2 ml. NIPAGIN solution (stock solution: 10% w/v in absolute ethanol)

Suppliers (U.K.):
1.Oxoid dessicated liver, Code: L26 (500g); Oxoid Ltd., Wade Road, Basingstoke, England RE24 0PW.
2. Boots Plurivite Multivitamin Tablets: from Boots Chemist Shops, or The Boots Company, Nottingham, England.
3. Nipagin (500g.): Nipa Laboratories Ltd., Llantwit Fardre, Nr Pontipridd, South Wales CF38 2SN.

(B) Preparation

1. Mix LIVER, YEAST, SUCROSE and AGAR in a large beaker and add the water. Heat to boiling, with stirring, and continue to simmer

gently until all agar is dissolved and most lumps and particles are dispersed to produce a creamy liquid. **Avoid excessive evaporation**. (A Bunsen burner or microwave oven can be used.)

2. When almost ready, add 1 - 2 ml. of the 10% NIPAGIN solution (if required), and continue to heat for a further 1 - 2 minutes to drive off alcohol.

3. Remove from the heat, add the MAPLE SYRUP and allow to cool to circa 50°C. Add the two VITAMIN PILLS which have previously been crushed and powdered in a pestle and mortar.

4. Stir thoroughly to dissolve and disperse. Then pour into suitable containers, cover and allow to cool and set. (The quantities recommended will fill five plastic petri dishes (90mm.) to a depth of circa 5mm.)

5. Store in a refrigerator until required.

(C) Use

Only small pieces of food need be used. Pieces circa 1cm. square can be cut from the blocks using a small knife or scalpel. These will dry out over the course of a few days and will need to be replaced regularly. Sometimes half-dry food appears to be more attractive than completely fresh food. Ladybirds can be kept in small plastic containers such as petri dishes, but these need to be washed out and changed frequently (at least once a week), not only to avoid the build up of mould spores, but also to remove their own toxic waste products.

The unprotected food does not grow bacterial colonies because of the high sugar content recommended. But fungal growth can be rapid and cause a problem. The addition of a fungal inhibitor such as NIPAGIN reduces mould growth considerably and does not appear to be too poisonous to ladybirds at the low concentrations recommended. If in doubt, two batches should be prepared, one with fungicide and one without, and their performance compared.

Discussion

The agar/liver based artificial food described in this paper has been successfully used in maintaining the adults of many different species of ladybird and their larvae for the past three years. We ourselves have been mainly concerned with the Chilocorids, while Dr Majerus and his co-workers in this Department have successfully fed many of the other British species of ladybird on this food, and several species sent from overseas also.

Because it has proved so successful from the start we have had very little incentive, or time, to experiment with the recipe to try to improve it. It is quite possible that improvements could be made by changing

some of the ingredients, or their concentrations. Modifications would almost certainly improve its performance with different species and the addition of powdered host (Aphid or Coccid) material, as recommended by Smirnoff (1958) might also help with some species. One should feel free to experiment, as we have done, using the present recipe as a starting point.

We have noted differences in its usefulness with adults and larvae of the same species. Thus, adults of *Exochomus quadripustulatus* and fully grown larvae accept the food with no difficulty and adults can be kept alive for almost 12 months on this artificial food alone, with no live food. The younger instars of *Exochomus*, however, find this food toxic and die soon after eating it. Similarly, adults of *Anatis ocellata* have been kept alive for 12 months on this food alone. *Anatis* larvae can be reared through to adults fed from early instars on this food (in the individual containers to avoid cannibalism), but larval secretions, or waste products, turn the food blocks black, and they should be changed every 1 - 2 days.

Although many species of ladybird can be kept alive for long periods of time on this food alone, they usually do not show mating behaviour unless their diet is supplemented by some live food. Of the species we have tried with this food, the one least interested in eating it in its present form is *Cryptolaemus montrouzieri*. This is unfortunate, in view of the widespread use of this ladybird in biological control programmes. No doubt changes could be made to the recipe to make it more acceptable to this species.

Other carniverous beetles and even Hemipterans have been fed with this artificial food and have found it acceptable. It is quite likely that variations of this recipe could be of wide applicability for the mass culture of carniverous insects in general, should the need arise.

References

Bain, J., P. Singh, M.D. Ashby and R.J. VanBoven 1984. Laboratory rearing of the predatory Coccinellid *Cleobora mellyi* (Col.: Coccinellidae) for biological control of *Paropsis charybdis* (Col.: Chyrosomelidae) in New Zealand. *Entomophaga* **29**: 237-244.

Smith, B.C. 1965 a. Effects of food on the longevity, fecundity and development of adult Coccinellids (Coleoptera: Coccinellidae). *Canad. Ent.* **97**: 910-919.

Smith, B.C. 1965 b. Growth and development of Coccinellid larvae on dry foods (Coleoptera: Coccinellidae). *Canad. Ent.* **97**: 760-768.

Smith, B.C. 1965 c. Differences in *Anattis mali* Auct. and *Coleomegilla maculata lengi* Timberlake to change in the quality and quantity of the larval food (Coleoptera: Coccinellidae). *Canad. Ent.* **97**: 1159-1166.

Smirnoff, W.A. 1958. An artificial diet for rearing Coccinellid beetles. *Canad. Ent.* **90**: 563-565.

PRECIS FROBENIUSI (STRAND 1909) STAT. NOV. (LEPIDOPTERA — NYMPHALIDAE)

By L. McLeod*

Introduction

The extreme seasonal polyphenism exhibited by some *Precis* species has in the past caused some confusion amongst taxonomists. Earlier this century, breeding one form from another finally proved some of these butterflies to be conspecific. It was this extensive variation within a species and the resulting confusion, together with its rarity in collections, which undoubtedly led to the incorrect classification of *P. frobeniusi.*

For some years I have been investigating the seasonal polyphenism of certain African members of this genus (McLeod 1984) especially *P. octavia* Cramer and *P. archesia* Cramer. As one would expect, the range of seasonal variation within a species is limited and any deviation can immediately be recognised. During the studies of *P. archesia* I became well-acquainted with the range of variation between the two extreme phenotypes f. *obsoleta* Joicey and Talbot and f. *pelasgis* Godart (McLeod 1980). One of the forms of *P. archesia* previously described from West Africa was f. *frobeniusi* Strand, and I found the detailed description (after translation) to be rather puzzling. The insect did not readily fit into the normal range of variation exhibited by *P. archesia.*

I reproduct here my own translation of Strand's original description:

"archesia Cr. form Frobeniusi Strand n.v.

One specimen from Boola, two labelled : Liberian trip, north of Karawaui.

The two proximal of the four transverse bars of the cell, which are normally blue are here a thick bright red. The two distal are slightly lighter than the ground colour of the wings but are surrounded with a deep black border.

The discal bars and the submarginal bands are almost as in (P.) coelestina *Dew., the discal bars are however slightly narrower, the sections in the species 1b, 2 and 3 are demarcated laterally by inward cuts and have bright white, broad-ringed pupils, of which that in space 2 is the largest.*

The forewing discal bars divide as in coelestina *but the distal branch is clearly resolved into spots, whereas the proximal is narrower posteriorly. The white pupils between them both are as on* coelestina.

The sections of the red discal bars of the hindwings are smaller and have larger pupils than those of coelestina.

The submarginal bands are as on f. archesia *but are more pronounced and the white marginal lunules are even more sharply marked.*

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Blue or blue/white dusting of the hindwings as is normally found on the typical form is found here only on the tail appendage.

The ground colour is slightly darker.

The upperside is actually more similar to P. coelestina *than* P. archesia *but the fact that it is a form of the later species is shown by the similarity of the undersides of the wings. Here, however, they appear cloudy and more uni-coloured because the grey-whitish dusting, which in the case of f.* archesia *forms about 5 - 6 transverse lines of flashes, is completely or almost completely missing here. A darker submedian line on the hindwings is difficult or impossible to recognise.*

The reddish discal bar (of f. archesia*) is here roughly red-brown with black pupils on the hindwings but with white pupils on the forewings approximately as in the typical form. However, those pupils in space 2 are considerably larger than the neighbouring ones, of which those in space 3 are just as clear as those in space 1b.*

Wing span (male) approximately 50mm. Wing length 26-28mm."

The illustration of this butterfly in Boorman & Roche (1959) did suggest to me that the insect was not in fact *P. archesia* but the photograph was in black and white. The above description plus a monochrome photograph were obviously inadequate information upon which to base conclusions. I therefore set out to locate further specimens. It soon became apparent that this butterfly was very rare in collections. In 1973 the British Museum had only one. This was the specimen figured in Boorman & Roche 1959. On seeing the single specimen in London it was immediately apparent to me that this butterfly was not a form of P. *archesia* but was a completely separate species. I decided that further specimens must be examined before raising it to species level. It was also noted that the specimen was a female and not a male as stated by Boorman & Roche.

Several other museums visited did not possess any examples of this butterfly. These included the Hope Department of Entomology, Oxford: the Museum Nationale, Paris: the Booth Museum of Natural History, Brighton (Hall Collection of Nymphalidae): the National Museum, Nairobi, Kenya: the National Museum, Pretoria, South Africa. The original three specimens upon which Strand based his description fortunately survived the bombing of Berlin during the second world war. While visiting the British Museum in 1973 I met R.G.T. St. Leger and on learning that he was soon to visit northern Nigeria I requested that he look out for this butterfly at Jos. Apparently he was lucky, and he later presented a further three specimens to the British Museum collection. These three individuals were all males.

In 1977 following further requests, I received ten specimens (5 males and 5 females) collected by W. Taylor at Vom, Plateau State, Nigeria.

It is upon these fourteen specimens that I base the following description which I hope will stress some of the unique characters of this butterfly.

Description

The wing patterns of both upperside and underside are typical of the genus and there appears to be little or no difference between the sexes. Females tend to be larger than the males. In the limited series examined the mean wingspans were: female 54mm and male 47mm.

Upperside

Both fore and hindwings closely resemble those of *P. coelestina* Dewitz. The main character which separates these two species is the post-discal bar, which is orange in both species, but tends to be slightly yellower in *coelestina*. The post discal bar of *coelestina* resembles a series of connected circles divided by the veins whereas that of *frobeniusi* is a definite bar with indentations at those points on each side where the veins traverse the bar. This gives the sections of post-discal bar within each space a characteristic wedge shape on both proximal and distal sides. The forewing post-discal bar divides as is typical for the genus, but the distal branch continues inwards along the apical margin of the forewing in spaces 8 and 9, and almost meets the end of the proximal branch. The ocelli situated in the post-discal bar are usually white-pupilled but sometimes pupils are absent from the ocellus in space 3 of the forewing. The ocellus of space 2 is invariably the largest. The white-pupilled ocelli of spaces 4, 5 and 6 are situated between the two branches of the post-discal bar. The broken sub-marginal bands are orange (as in *P. coelestina* and *P. limnora* Klug.). Those of *P. archesia,* when they exist, are never orange. The inner submarginal band is indistinct and cream coloured whereas the outer submarginal band is a very pronounced orange. The ground colour is dark brown throughout.

On the hindwings there is a pronounced projection of the wing edge at vein 5, and a less prominent projection of vein 2. (These characters do not occur in *P. archesia, P. coelestina* and *P. limnoria*, but are found in certain other species eg. *P. ceryne* Boisdvl. f. *tukuoa* Wallengren and *P. natalica* Felder.)

Underside

The undersides of both fore and hindwings are a poor reflection of their uppersides.

The post-discal bar is less pronounced and is pale brown in colour, contrasting greatly with the dark brown of the basal half of the wings. The contrast is enhanced by a very narrow cream line which divides the post-discal bar from the basal half of the wing.

White pupils can be present in the small ocelli of the forewings but are often lacking on the hindwings.

A very dark circular area surrounds the ocellus of space 2 of the forewing. This dark area also shows a tendency to spread around the ocellus of space 3 and is an important distinguishing character.

The transverse bars of the cell of the forewing are here pale brown. Towards the wing bases of the hindwings are to be seen pale brown and greyish markings, the patterns of which are typical of this group of *Precis* spp.

The submarginal bands are here merged into one which can range in colour from cream, through pink to violet.

Distribution

1. Northern Nigeria. Confirmed locality: Jos, Bauchi (Plateau State).
2. Liberia? Unconfirmed (north of Karawaui cited by Strand 1909).
3. Upper Guinea? Unconfirmed (Boola cited by Strand 1909).

No mention of this butterfly appears in *Butterflies of Liberia* (Fox *et al.* 1965). Most *Precis* species have wide ranges of distribution. The apparent limitation of this butterfly to the Plateau State of northern Nigeria tends to stress the relatively unusual conditions existing there. This fact is also reflected in other sections of the fauna.

Genitalia

Three preparations were made of male genitalia of *P. frobeniusi*. Unfortunately these were lost (together with those of *P. archesia*) during a move from France to South Africa in 1984. Consequently a detailed description cannot be given. Pencil sketches made at the time show that although the general appearance of the male genitalia of *P. frobeniusi* and *P. archesia* were similar, there were some obvious differences. The arrangement of the row of chitinous teeth of the valve was different in each species. Although the variation in arrangement of the teeth was fairly considerable within a species, differences between the two species enabled identification in the small sample available.

Habits

This butterfly is common at the beginning of the dry season, which lasts from October until May. It is particularly found along streams and

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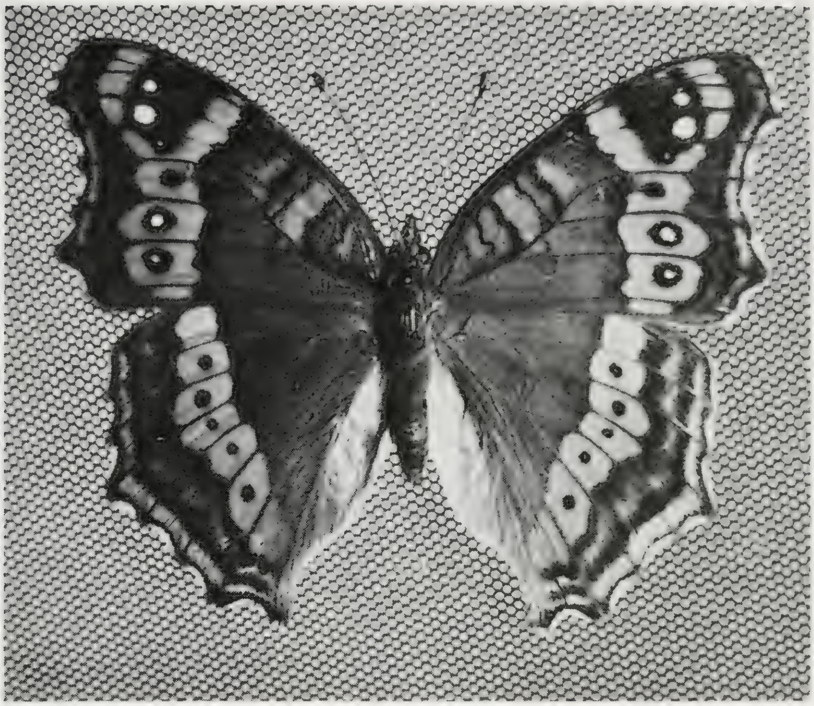
TABLE SHOWING IMPORTANT DIFFERENCES BETWEEN FOUR *PRECIS* SPECIES

	P. frobeniusi	*P. limnoria*	*P. coelestina*	*P. archesia*
1. The edge of the hind wing extends into a small appendage at the extremity of vein 5	+	–	–	–
2. A smaller hind wing appendage is present at the extremity of vein 2	+	–	–	–
3. The submarginal bands are orange.	+	+	+	–
4. The post discal bar resembles a number of connected rings.	–	–	+	+ (*f.chapunga*)
5. The distal branch of the forewing post-discal bar extends inwards along the apical margin to almost join the proximal branch	+	–	–	–
6. That portion of the post-discal bar in cell 2 of the forewing has the largest pupil.	+	–	+	–
7. Seasonal polyphenism	–	+	–	+
8. Distribution	Nigeria	East & Central Africa	East & West Africa	East, Central South & SW Africa



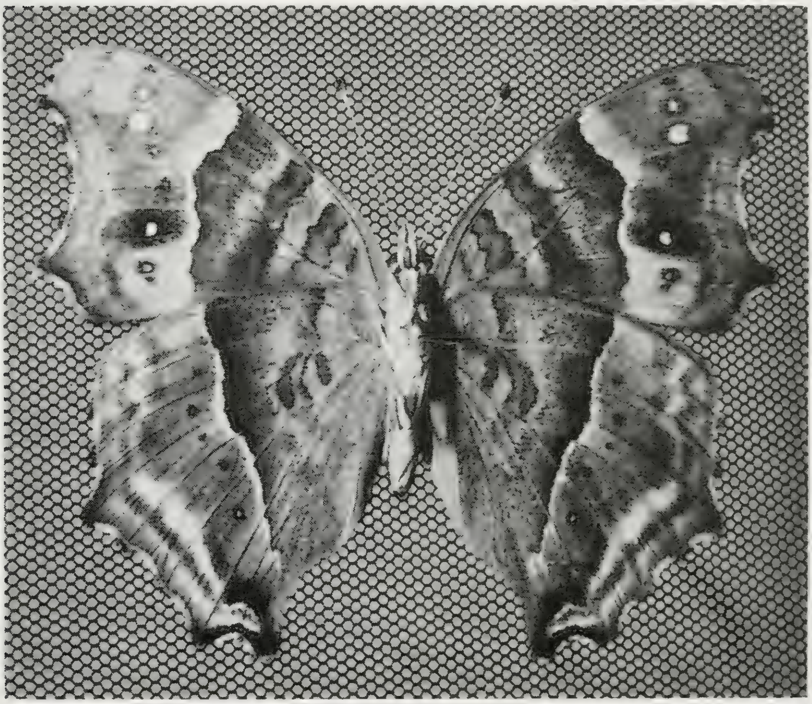


Fig. 1 (Top). *Precis frobeniusi* (Strand, 1909). Female upperside (x 1.34).
Fig. 2 (Below). As above. Female underside. (x 1.34).

stream beds in the dry savannah country between Jos and Bauchi. It is also fond of roosting in quarries. November is the month when the species is most numerous and it is blown far and wide by the wind, the Harmattan, a cool wind blowing southward from the Sahara. It is rarely seen between the end of December and May, when the rains begin, because it is aestivating, but occasional tattered specimens do appear.

The butterfly is noticeable for two reasons. Firstly, like most *Precis* species, it is attracted by garden flowers. Jos, being the centre of Nigerian tin mining and a hill station, has many nice gardens. Secondly, after emerging, the butterflies search for suitable places to roost and aestivate and thus find their way into buildings.

A wet season form is not described and it is quite likely that differences in pigmentation and wing shape are not pronounced between the two seasons. A single specimen taken in May 1975 by Mr Roberts, a biologist at the University of Jos, is at present the only fresh specimen known by the writer to have been taken during the wet season. The butterfly was apparently newly emerged and had straighter wing edges than the dry season form. It is unusual that *P. frobeniusi* is less common during the wet season. Other *Precis* species eg. *P. octavia* Cramer and *P. antilope* Feisth. are commoner during the wet season than during the dry season.

The importance of *P. frobeniusi* lies in its relatively limited distribution when compared with other species of the genus. A greater knowledge of its distribution, the physical or climatic factors which led to its segregation, and its present biological requirements, will greatly improve our understanding of speciation within the genus *Precis*.

Conclusion

Whilst the original description made by Strand of *Precis archesia* f. *frobeniusi* remains valid, the evidence presented in this paper suggests that *frobeniusi* is a distinct species.

References

Boorman, J. and Roche, P. 1959. *The Nigerian Butterflies* Part V: Nymphalidae Ibadan University Press.

Fox, R.M., Lindsey, A.W., Clench, H.K. & Miller L.D. 1965. The Butterflies of Liberia. *Mem. Amer. Ent. Soc.* **19**: 1-438.

McLeod, L. 1980. *Precis archesia ugandensis* (Lep.: Nymphalidae) A New Subspecies. *Entomologist's Rec. J. Var.* **92**: 109-113.

McLeod, L. 1984. Seasonal Polyphenism in African *Precis* Butterflies in the Biology of Butterflies. *Symposium of the Royal Entomological Society of London* **11**: 313-315. Academic Press, London.

Strand, E. 1909. Lepidoptera von Ober-Guinea und Sudan, gesammelt von Herrn Leo Frobenius. *Archiv fur Naturgeschichte* **75**(1): 303-311.

Owen, D.F. 1971. Adaptation to man-made Environments and Phenology in *Precis* butterflies. *Rev. Zool. Bot. Afr.* LXXXIII (3-4): 361-373.

SOME RECENT RECORDS OF UNCOMMON DIPTERA IN SOUTH HERTFORDSHIRE

By A. Godfrey*

From 1985 to 1987 a casual survey of certain Diptera families was undertaken in the Watford area of South Hertfordshire. Details of part of this survey, along with lists of craneflies, larger Brachycera and hoverflies are given elsewhere (Godfrey in prep.). Mention of some of the more uncommon and interesting species observed amongst the other families studied is given below.

DITOMYIDAE

Ditomyia fasciata (Meigen). Easily recognised because of its banded wings this is a nationally uncommon species associated with beech (*Fagus sylvatica*) woods. This species was found to be frequent in Whippendell Wood, one mile west of Watford, on or about beech logs, in the southern part of the wood TQ 076974. Dates taken include 12.x.1985, 13.x.1985 and 28.iv.1986.

LONCHOPTERIDAE

Lonchoptera scutellata Stein P. One female was taken in a water trap containing a weak formalin and detergent solution placed amongst *Typha latifolia* in the marsh at Cassiobury Park Nature Reserve, ½ mile west of Watford TQ 089975 on 25.iii.1987.

PIPUNCULIDAE

Nephrocerus flavicornis Zett. One male in water trap on 14.vii.1986, in Harrocks, 1½ miles west of Watford TQ 068978. The trap was placed in a clearing by the footpath in secondary woodland dominated by hazel (*Corylus avellana*) coppice. Scrub vegetation in the clearing includes *Euphorbia amygdaloides, Prunella vulgaris, Epilobium* sp. and *Rubus* sp. (All references to Harrocks Wood below refer to this site.)

OTITIDAE

Physiphora alceae Preyssler. Until recently known as *P. demandata.* Whilst not rare, this species is unfamiliar to many and not often recorded. It is a species that likes sun and is mostly seen in hot weather. One female was taken basking on a beech log, Whippendell Wood, Watford, TQ 076974 on 27.vii.1985.

MEGAMERINIDAE

Megamerina dolium (Fabricius). One female on 17.ix.1985, one male on 13.viii.1986, in water trap in clearing in woodland, Harrocks Wood,

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ford TQ 068978. Chandler (1975) gives an account of the distribution and biology of this local species and mentions the previous Hertfordshire record from Northaw Great Wood in 1966 collected by A.E. Stubbs and C.O. Hammond. It is thought that this species develops in rotting wood but this still has to be proved.

PSILIDAE

Chyliza scutellata Fabricius. A female was taken on 17.vii.1986 in a water trap in Harrocks Wood, TQ 068978. A male and second female were subsequently taken in the same manner on 19.viii.1986.

CLUSIIDAE

Paraclusio tigrina (Fallen). One male of this rare species was taken on the sawn end of a beech log in Whippendell Wood TQ 076974 on 12.x.1985. A second male was taken a few yards away on another beech log on 1.viii.1987. Chandler (1973) gives a useful account of this species. Like other clusiids, this species probably develops in rotting wood.

DROSOPHILIDAE

Leucophenga maculata (Dufour). Usually on or about bracket fungi on beech logs. Records include one male and one female on beech logs in Whippendell Wood TQ 076974 on 28.iv.1986, one female on fungi on silver birch (*Betula pendula*) log in Bricket Wood, Watford TQ 127007 on 3.v.1986, three females on beech logs, Whippendell Wood TQ 076974 on 13.vii.1986 and one female hovering around beech stump, Whippendell Wood TQ 073976 on 1.viii.1987. This species is known to be a fungus feeder and also visits *Ganoderma* brackets with *Drosophila confusa* (Chandler pers. Comm.).

Stegana nigrithorax Strobl. Frequent on beech logs in Whippendell Wood. Dates include one female on 28.ix.1985, three females on 13.vii.1986, and one female on 29.vii.1986, all TQ 076974.This species has been bred from the fungus *Hypoxylon fragiforme* growing on beech bark and it may be worth noting that a *Hypoxylon* species is abundant on the beech logs from where the flies were taken. Determination of this species follows the recent revision by Chandler (1987).

TACHINIDAE

Alophora hemiptera (Fabricius). A distinctive species of 'parasite fly' because of its resemblance to a bug. Taken in a water trap in Harrocks Wood, Watford TQ 068978 on the following dates, one male, 9.vi.1986, one male 22.vi.1986, and one female 15.ix.1986.

Hemyda vittata (Meigen). A rare species confined in Britain to Hertfordshire and Sussex but no doubt overlooked. Originally recorded as new to Britain from nearby Whippendell Wood in 1956 by Barfoot

(1957). Details of other captures may be found in Chandler (1976) and Jones (1978). One male taken in water trap, Harrocks Wood, Watford TQ 068978 on 15.ix.1986.

Subclytia rotundiventris (Fallen). Another rare species originally added as new to the British list by Wainwright (1940) from a specimen taken by J.E. Collin from Farley Down, Hampshire and recorded from only a few localities since (see for example Chandler 1976). One male taken on 15.viii.1985; one male and one female on 27.vi.1986, and one male on 22.vii.1986, all in water trap, Harrocks Wood, Watford TQ 068978.

Servillia ursina (Meigen). One of the early spring species and consequently probably overlooked. Several specimens were taken in an open grassy area in Bishop's Wood, Rickmansworth, TQ 068919 on 2.v.1986.

Acknowledgements

My warmest thanks to Peter Chandler for his help in checking identifications and for useful comments on the species mentioned above. Alan Stubbs kindly checked the specimen of *L. scutellata*. For permission to collect in Whippendell Wood, I would like to thank Watford Borough Council and the Nature Conservancy Council. For permission to collect in Cassiobury Park Nature Reserve my thanks are tendered to the Hertfordshire & Middlesex Wildlife Trust.

References

Barfoot, S.D. 1987. *Phania vittata* Meig., A Tachinid fly new to Britain. *Entomologist's Mon. Mag.,* **93**: 85.

Chandler, P.J. 1973. Some Diptera and other Insects associated with decaying elms (*Ulmus procera* Salisbury) at Bromley, Kent, with some additional observations on these and related species. *Entomologist's Gaz.,* **24**: 329-346.

Chandler, P.J. 1975. Notes on the British Status of Three Unusual Acalyptrate Flies (Diptera). *Proc. Brit. Ent. Nat. Hist. Soc.,* 1975, 66-72.

Chandler, P.J. 1976. Notes on some Uncommon Calyptrate Flies (Diptera) Observed during recent years. *Entomologist's Rec. J. Var.,* **88**: 14-19.

Chandler, P.J. 1987. The British species of *Stegana* Meigen (Diptera:-Drosophilidae) — Deletion of *S. furta* (Linn) and addition of four species of the coleoptrata (Scop.) Group. *Entomologist's Rec. J. Var.,* **99**: 115-124.

Godfrey, A. Diptera in South Hertfordshire; 1985-1987, Part 1 Craneflies (Tipulidae) and related families (Trichiceridae, Ptychopteridae and Anisopodidae); Part 2 Larger Brachycera; Part 3 Hoverflies (Syrphidae). *Trans. Herts. Nat. Hist. Soc.,* (in prep.).

Jones, R. 1978. Some Interesting Diptera Taken in 1976 in Sussex. *Entomologist's mon. Mag.,* **113**: 124.

Wainwright, C.J. 1940. The British Tachinidae (Diptera): Second Supplement. *Trans. R. Ent. Soc. London,* 1940, **90**: 411-448.

RHAGONYCHA LUTEA (MÜLLER, O.F.) AND OTHER UNCOMMON CANTHARIDAE (COLEOPTERA) IN WEST WALES.— A short visit to Pembrokeshire and Cardiganshire in June 1988 produced an excellent range of Cantharidae of which the most interesting was *Rhagonycha lutea.* All records of this species known to me are English, from Yorkshire southwards, and across to Gloucestershire. A single example was taken on 22nd June by beating oak foliage along the western edge of Tycanol Wood (SN 090370) in North Pembs. A single *R. translucida* (Krynicki) was also taken from the oaks and appears to be new to South Wales. Other members of the family taken were *Malthinus flaveolus* (Herbst) and *Malthodes marginatus* (Latreille). Tycanol Wood is a grazed sessile oak wood which was formerly managed as coppice.

Another sessile oak wood — mature standards this time — along Garron Pill, Lawrenny (SN 014076), in South Pembs, produced *Malthodes guttifer* Kiesenwetter. Two males swept from bracken and woodrush beneath the oaks on 2nd July were the only cantharids taken during the visit. This is a new species to the county.

On 21st June, D.K. Clements swept a single *Malthinus balteatus* Suffrian from ash in a wooded stream valley at Llwynwermod, Cardiganshire (SN 373579) — new to that county.

I would like to record my thanks to Dr S.B. Evans for permission to sample in Tycanol National Nature Reserve. Llwynwermod is a property of the National Trust. K.N.A. ALEXANDER, National Trust, Spitalgate Lane, Cirencester, Glos GL7 2DE.

ADISTEMIA WATSONI WOLL. (COL.: LATHRIDIIDAE): A THIRD OCCURRENCE IN WEST KENT.— I was much pleased to find, for the first time, a specimen of this tiny but very gracefully-formed beetle crawling on a page of an open book on my kitchen table on the night of 20th March, 1988. Whence it got there is, in the common phrase, "any body's guess" and I have not, to date, found another individual, let alone an infestation; but fruit of various kinds from local shops is always on the table, so the beetle (a mould feeder like the rest of its family) may perhaps have been brought in on some such provender. The species is, however, spreading slowly to outdoor habitats in certain areas and could possibly by now be established locally. The records are widely scattered — see R.C. Welch (1984, *Entomologist's mon. Mag.* **120**: 206), who gives a useful summary of its British history. The present find of *A. watsoni* is not the first for West Kent, as it has occurred at Hayes and Bromley (in buildings). — A.A ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

CLEORODES LICHENARIA HUFN., THE BRUSSELS LACE (LEP.: GEOMETRIDAE) IN BRITTANY— At the beginning of June, 1988, whilst surveying moths on the Cap Sizun nature reserve in Brittany, I had pointed out to me a number of green geometrid larvae feeding on the exposed north-western faces of lichen covered rocks on the cliffs. From their colour,

they were quite obviously *Cleorodes lichenaria*; this was confirmed when I was shown black and white photographs of the imagos. The reserve is treeless, being very similar to the grass and heather covered cliffs of Cornwall. The most common moths here were *Ceramica pisi L., Hada nana* Hufn, *Hadena confusa* Hufn, *Hadena perplexa perplexa* D. & S. and *Spilosoma lubricipeda* L.

The larvae were very well camouflaged, feeding on *Ramalina siliquosa*. There were a number of pupae, in silken cases covered with tiny fragments of lichen and fastened to the lichen fronds. On 3rd and 4th June I collected two cases, and two adults emerged, one on 14th June, the other between 18th and 22nd June. They were much lighter than any British specimen I have seen; one had a light dusting of green scales, the other was a plain light brown colour. It may be that lighter coloured moths are better camouflaged when resting on the granite rocks.

My reference books suggest that *Cleorodes lichenaria* feeds on lichens on trees and fence posts. They have been recorded from Mull, where I at first thought that the larvae must feed on lichen-covered rocks, but I was told that there are some stunted trees here that could provide the substratum for the lichens (Bernard Skinner, pers. comm.). The moth is common in Cornwall, even in some coastal districts e.g. Porthgworra, but there are always trees nearby. I have yet to find the larvae on coastal rocks in Cornwall. A. SPALDING, Tregarne, Cusgarne, Truro, Cornwall.

SPHAEROPHORIA VIRGATA GOELDLIN DE TIEFENAU (DIPT.: SYRPHIDAE) IN HEREFORDSHIRE.— The paper by C.W. Plant (1988, *Entomologist's Rec.J.Var.*, **100**:73), on the occurrence of this and other species of *Sphaerophoria* in the Wyre Forest, Worcestershire, prompts me to record my capture of a single male specimen of *S. virgata* at Hough Wood, Hereford, on 22nd July 1980. I cannot recall the nature of the locality but it would most probably have been a woodland "ride" environment.

I am obliged to Dr M.C.D. Speight for confirming my original identification.— ROY CROSSLEY, 46 St. David's Road, Otley, West Yorkshire LS21 2AW.

PERIZOMA SAGITTATA FAB. AND LOMOGRAPHA BIMACULATA FAB. — TWO SPECIES OF LEPIDOPTERA NEW TO YORKSHIRE.— A single specimen of the marsh carpet, *Perizoma sagittata*, was taken in Askham Bog, near York, on the night of 10th July 1987 by myself and Peter Forder. This locality is some 40 miles north of the known sites for the species in north Nottinghamshire. Mr S.M. Jackson found a larva in the bog during August, confirming that the species breeds here.

On the night of 11th June 1988, I was working m.v. lights with Peter Forder in Bishop Wood near Selby. It was a poor night for moths, with only 40 species noted at the traps; however, two specimens of

Lomographa bimaculata, the white-pinion spotted, were a pleasant surprise. Although well known from parts of Cumbria, these are apparently the first genuine records from Yorkshire and may indicate a spread in distribution, though from a southerly direction, as the moth was first recorded from the neighbouring county of Derbyshire for the first time in 1986. N. GILL, 3 Wentworth Drive, Emley, Huddersfield, Yorks.

[NOTE: *bimaculata* was also reported for the first time in Leicestershire (1985), Shropshire (1986) and Nottinghamshire (1987). BS.]

DIORYCTRIA SCHUETZEELLA FUCHS (LEP.: PHYCITINAE) IN NORTHAMPTONSHIRE.— On the night of July 15th 1988 I was operating an m.v. lamp on the Bucks/Northants border close to the small town of Olney. About midnight a small and interesting looking moth appeared on the sheet which I collected for closer examination. On consulting Goater (1986) *British Pyralid Moths,* it proved to be *Dioryctia schuetzeella,* a recent arrival to these shores hitherto confined to the extreme south-eastern counties.

The lamp was being run close to quite a large plantation of Norway spruce, *Picea abies,* the larval foodplant of this moth. On the same night, my wife boxed a specimen of the cloaked pug, *Eupithecia abietaria* Goeze from the vegetation near to the sheet. This is an interesting, but not unique, capture for the area. C.E. HIGGS, The Cottage, Willen, Milton Keynes, Bucks MK15 9AD.

DIORYCTRIA SCHUETZEELLA FUCHS (LEP.: PHYCITINAE) IN CAMBRIDGESHIRE.— While light trapping with Bernard Skinner at Chippenham Fen, Cambridgeshire on the night of 18th July 1988, two *Dioryctria schuetzeella* were noted at m.v. This appears to be a new county record and the most northerly occurrence in England of this predominantly Kentish moth. Permission to visit Chippenham Fen granted by the Nature Conservancy Council, is acknowledged with thanks.— J.M. CHALMERS-HUNT, 1 Hardcourts Close, West Wickham, Kent.

TWO NEW LEPIDOPTERA RECORDS, AND A CORRECTION, FROM CARDIGANSHIRE.— In 1988 the Nature Conservancy Council published *The Moths of Ceredigan* by A.P. Fowles (Nature Conservation Series No. 8). To this I would like to add two further records — firstly *Furcula bicuspis* Borkh., a single specimen taken at Trawscoed, near Aberystwyth, on the first week of June 1956, and secondly *Odezia atrata* L. — a long established colony occurs in an ancient pasture at an altitude of some 400 ft near Aberystwyth.

Fowles (*loc. cit.*, p.65) quotes ". . . P.M. Miles reported nineteen [*Enargia ypsillon* D. & S.] from Yns-las dunes NNR . . .". This is an accurate reproduction from my paper on the moths Dyfi National

Nature Reserve (*Entomologist's mon. Mag.* **116**: 246-252). Unfortunately, this record was in error, and referred to *Agrotis ipsilon* Hufn. (mis-spelt as *ypsilon*). *Enargia ypsillon* D. &. S. has not been recorded here since the 1930s, when Dr Salter took four specimens at Llanbadarn Fawr, Aberystwyth. P.M. MILES, Werndeg, Cnwch Coch, Aberystwyth, Dyfed SY23 4LQ.

TWO NOTABLE GARDEN BEETLES .— *Athous campyloides* Newm. (*difformis* Lac.) is, I think, quite uncharacteristic of gardens at all events in the London suburbs, and its recent occurrence in my very modest one in that area was a surprise indeed. A female of this click-beetle was found (2.vii.88) half-exposed in a slight horizontal burrow in the soil surface under a brick, one of a group laid down as beetle traps in a rough wild corner of the garden. By an odd chance, an example of the common *A. haemorrhoidalis* had occurred under that same brick in May, first as a larva and a fortnight later as an adult. *A. campyloides*, a highly localised but gregarious crepuscular species, is always very much rarer in the female sex, this being only my second specimen; in 1977 I had encountered the males freely on a restricted part of Woolwich Common near here, as usual by sweeping long grass towards dusk (*Ent. Rec.* **90**: 279). The females may well be strictly nocturnal and perhaps spend much of their time in the larval burrows. I kept the Charlton one alive the rest of that day and night, but it showed no increase in activity, remaining very sluggish; it was perfectly mature. The season for the species is mid-July to mid-August, and I shall hope to find further signs of its breeding at the spot.

(Up to now (mid-August) none have been found. Yet another *Athous* — *bicolor* Gz. — inhabits the garden, though not seen in recent years, and never elsewhere in the district; this last is true also of the weevil *Trachyphloeus aristatus* Gyll. Both species, therefore, may have been introduced there with plants.)

On 12th June, tapping over a net an isolated plant of *Mercurialis annua* which had sprung up in the front garden produced eight specimens of *Apion semivittatum* Gyll. — the weevil's presence being suggested by small holes in the leaves, not previously noticed. Ever since taking a very few in another part of the district in 1979 (*Ent. Rec.* **91**:773), I had kept a frequent look-out for the insect on its food-plant where this had strayed a little from front garden-edges in the vicinity, but without finding it again until now. Since I wrote, the annual mercury has increased largely hereabouts, and is no longer the short-lived autumnal plant that it then appeared to be; it is now in evidence from spring or early summer onwards in many suitable spots. Consequently, *A. semivittatum* is probably by this time quite common in the district. I have heard of the beetle from a Wiltshire garden recently, so it seems to be still spreading.— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

The Butterflies of Hertfordshire by **Brian Sawford.** 195pp. 23 pages of colour plates. Numerous maps and half-tone illustrations. Boards. Castlemead Publications, 1987. £15.00 ISBN 0-948555-03-3.

In recent years a number of books on the theme "the butterflies of such and such a County" have been published, and readers may be forgiven for wondering if there is anything else of value to say about British butterflies. Happily, the result of assiduous recording and observation in the hands of a capable author can still produce a worthwhile and readable text.

In the current book, the first eight chapters cover a general perspective on the County of Hertford, its geology, soils, landscape, climate, major butterfly habitats — many of these illustrated by half-tone photographs — and historical notes on Hertfordshire butterflies and their study including a useful list of major collections and their current locations.

Treatment of individual species occupies the bulk of the text, and takes the form of an interesting narrative, rather than the mechanistic listings that have appeared in so many butterfly books. The distribution of each resident and, peculiarly, some immigrants is illustrated by a large, clear tetrad map and each of the 46 species is illustrated by a half-page colour photograph of a living insect. The narrative concludes with a chapter on conservation and the future of Hertfordshire's butterflies. Appendices give a list of some organisations concerned with recording and conservation, a note on tetrad mapping and a gazeteer of locations mentioned in the text together with their tetrad reference allowing, perhaps too easily, individual sites to be identified. A bibliography and index complete the book.

A brief review cannot do justice to this informative and well-written text. This aside, the substance to the text contains frequent references to local extinctions, declines, habitat loss and deterioration, and the concluding chapter on the future of butterflies in the county does not paint a particularly rosy picture, and the author forcibly underscores the action and vigilance needed to check further decline. Sadly, his words could equally apply to many Counties in the British Isles.

The colour illustrations, by the author, are aesthetically and technically of high quality, but there is no common magnification or any indication of scale so that, for example, a striking underside of a brown hairstreak appears larger than a Camberwell beauty! A number of the photographs have been published previously in *The butterflies of Sussex* by Mendel and Piotrowski (reviewed in this journal **98**:262) — an identical photograph of the brown argus is printed upside-down in one of the books!

Insects and Other Invertebrates in Classical Antiquity by **Ian C. Beavis.** 269pp. Boards. University of Exeter, 1988. £40.00 ISBN 0-85989-284-0.

It is unusual to find two books on such a highly specialised theme being published within a couple of years of each other, but in many respects this is fortunate as the current work does much to extend and complement *Greek Insects* by M. Davies and J. Kathirithamby published in 1986.

Dr Beavis attempts to provide a comprehensive survey of those insects and terrestial invertebrates which are referred to by Greek and Roman authors from the earliest times to AD600. The work excludes the honey-bee, and insect types found in art, fable and poetry. The role of each invertebrate type in Classical life and thought is discussed, including popular beliefs, general attitudes towards particular animals, their significance as domestic or agricultural pests (and measures employed for controlling them) and practical uses to man such as sources of food, medicines and particular products (*eg* silk).

Although primarily a scholarly work, the text is packed with fascinating snippets — accepting that quoting out of context runs the risk of trivialising a work, we learn, for example, that Pliny recommends a *cossus* larva, either crushed or applied directly, or burnt and applied with anise, as an effective treatment for all types of ulcer. Ants, clearly a pest in ancient times, receive good coverage — from discussions on the nature of ants and their societies to practical remedies for dealing with infestations of garden ants: these range from the sensible sprinkling of nests with powdered *origanon* and sulphur (Aristotle) to the baffling placement of a bat's heart at the entrance to a nest (Dionysius).

The general reader may find the text a little hard going — a working knowledge of classical literature and the ability to read phonetic Greek, although by no means essential, is a distinct help.

A CALL FOR CONTRIBUTIONS

Over the past few years the regular publication of the *Record* combined with an increase in the number of pages in each issue has considerably reduced the backlog of material, particularly papers, awaiting publication.

In order to maintain a varied selection of papers, notes and observations in the Journal we would like to receive material from readers for possible publication in the *Record*. Short notes, long notes and papers are equally welcome, on all aspects of entomology. Editor.

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Newly described taxa (species, genera etc.) are distinguished by **bold type**. Taxa new to Britain or newly recognised as British are denoted by an asterisk.

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